~~MUF RESEARCH:~~

PRP NEWS

Propagation
Research
Project

IGY BULLETINS
(EXCEPT #1, 2, 3, 17;
ie. JAN / FEB / MAR '57,
Apr. 1960)

57-1

1957

JAN-FEB-MAR 1957 + APRIL NEEDED

Missing!

#1, 2, 3, 17
— APRIL

173 176 181 184

The reporting form of TG9JW displayed successful transequatorial scatter work on the 20th, 24th, 26th and 27th. Some of the stations worked were LU3EX, LU1EAA, LU8AE, CE3EU and LU9MA. All this was between 1800 and 2100 EST on the dates concerned.

Sporadic-E openings, with a few exceptions, seemed to limit themselves to February 19th and 20th. W1HUN was particularly successful receiving southern stations on the 20th, and W1PHR reports that this opening lasted until about 2200 from his location. W5EXZ, W6AFC, W0YZZ were also active on the 19th, plus numerous other stations.

174 186

Our reporting forms were filled with QSOs made via back scatter on the 19th and 24th. The team of W3BGI and W3ZYK was receiving the back scatter signals from W8-land on the 19th as were W3AMO and W2IDZ. For the 24th, notable BS reports were submitted by W6BAZ, W6AFC and W9KLR. From our scrutiny of reports, it seems that the eastern states fared better on the 19th while the western states got their chance on the 24th.

More Japan-to-South America Contacts

205

Our information on F2 layer conditions during the last half of February and the first half of March was greatly increased by the resume sent in by JA1AN. He reports that conditions were best on February 23rd and March 4th, — 178 and proves this by submitting a long list of JA contacts with LU- and CE-land. On February 23rd JA1ATF had QSOs with LU9MA, LU3EX, and LU3NI. JA2IF worked LU3DH, LU3EX, and LU4DFN on the 4th of March. We have 30-odd other contacts involving similar distances for the 4th of March, courtesy of JA1AN.

On the 144-Mc. Scene

144 Mc. reports for the second half of February came piling in to us in great quantity. We were able to get a good overall picture of the band for this particular period of time.

Auroral openings were noted on February 20th, 21st, 23rd and 24th. The late evening hours of February 23rd and early morning hours of the 24th were, by far, the most productive. On the 20th, however, a slight opening appeared about 2200 EST. W9QKM and W2ORI both heard W8KAY in Akron, Ohio, at this time, and W2CBB heard W3HYJ's aurora signal. W0HXY worked W0IFS on February 20th via auroral propagation at approximately the same time. According to our reports, this was a very short opening.

The early evening hours of February 21st made for more activity. W9EGH was busy working W2OPQ and W3LZD. He heard auroral signals from W2VDI, W8BTK, and W2CXY. W2NLY heard W1QF, W1RUD and W1HUD. K0EMQ, W8PT, K2HOD, K2APS, W2LWI also caught this opening.

W9AAG reports that on February 23rd most of the signals peaked in with his beam almost due north which was somewhat unusual. He says that normally signals peak in 40° east of north from his location. At the same time, W2WZR tells us that the February 23rd opening was different than any other he has observed because the signals peaked to the northwest.

Our reporting forms really received a workout on the 23rd and early 24th. While lining up his new 417A converter, VE2FF heard numerous W1s and W2s via aurora, among these W2CXY, W2UTH, and W8DX. W9DSP, W9WOK and W0BJV were heard by W0YSJ. Others active during this opening were W4UMF, W4HHK, W3GKP, W8PLQ, W8URO, W9KLR, W9GLR, W9FVJ. These auroral signals lasted well into early morning, February 24th.

From the March 1st-15th reports received as of this date, we were able to tell that the most concentrated auroral activity on 144 Mc. took place on the 2nd and 10th. Reports were also received for auroral contacts on the 1st, 3rd and 15th with a few coming in for other dates, too.

W1RFU in Wilbraham, Mass., was particularly active in the early hours of the 2nd and the evening of the 10th and numerous other reports bear him out. On his way home from Memphis, Tenn., W4HHK noted a bluish-white auroral display on the northern horizon which he said was indeed very rare in that latitude. Reaching home, he immediately got on the air and received signals until about

three in the morning on March 2nd, although the visual aurora faded out before that time. This was altogether a very successful period on 144 Mc. aurora-wise!

More March 50-Mc. Work

50 Mc. auroral activity for the first two weeks of March pretty well coincides with the 144 Mc. reports. Concentrated activity was on the 1st, 2nd and 10th. W2IDZ in Denville, New Jersey, worked and heard a goodly number of stations on all three dates. The receiver at W7COL was given quite a workout on the 1st when he heard such calls as W0CNM, W7IFG, K0GKR and W7CJN, plus many others. Our VSWL observer, Jim Pickering, was at his station on all three dates, too, and submitted a large number of auroral reports.

Other activity on 50 Mc. was limited. K6EDX caught a very brief sporadic-E opening on the 8th between 1712 and 1735 PST, when he heard W5GL's signal and worked W5EXZ. On the 1st, W7INX in Portland, Oregon, heard signals from W0-land during another brief opening between 2245 and 2350 PST. An especially interesting and informative transequatorial scatter report was received from XE1GE. He was successful with TE work on March 14th between 1945 and 2235 CST when he worked such stations as LU3EX, LU3DH and CE3BM. On the 15th, he began to receive TE signals as early as 1525 CST, and they kept coming through at his location until 1910. CHC

FLASH! 50 Mc. OPERATION AUTHORIZED IN CT1, 2, AND 3!

Here's great news for all of us wanting some European/North African stations to work on six meters! We have just heard from CT1CO, Lisbon, Portugal, that 50 Mc. operation has been authorized in CT1 (Portugal), CT2 (Azores Islands), and CT3 (Madeira Islands) until December 31, 1958. This is, by the way, a very good example of how the IGY effort can be of direct help to amateur radio as well as the other way around.

BEACONS -- PRO AND HAM

A forthcoming QST article by Ken Bowles, K0CIQ, and Bob Cohen, both of the Central Radio Propagation Laboratory, will present the detailed story on the NBS beacon stations to be set up in South America for the IGY. We mentioned this briefly in last month's News, and will carry the latest dope as it comes to us.

IT JUST CAME! A wire from Ken reveals that the three beacon transmitters will be set up in Illinois for testing, and as part of a separate experiment. Frequencies used will be 49.56, 49.6 and 49.64 Mc. Emission will be plain, unmodulated carrier for the most part, although the call WWI has been assigned to the 49.6 rig. This one will be set up in Savannah, Illinois, with the other two located about 100 miles to the north and south. All will run high power and feed large rhombics aimed at Boulder, Colorado.

It is hoped that the beacons will be in full-scale operation (24 hours a day) by April 15th. They won't be on too long, since the rigs must be dismantled and shipped to South America by the middle of May. While they last, however, they should furnish much data on early-season sporadic-E for PRP observers. With all that power and a good opening, it won't make too much difference where those rhombics are headed. In addition, stations located along the antenna beam will have the opportunity to observe ionospheric/meteor scatter behavior on an around-the-clock basis. Take a listen for these beacons, and tell us what you hear!

Incidentally, we still want to hear from any amateurs or amateur groups who would be interested in setting up 50 or 144 Mc. beacon stations as part of PRP. Let us know what you could manage. Several parties have already been heard from, and we'll have more on this in future issues.

THINGS FROM HERE AND THERE

VHF/UHF Amateur Directory

Mentioned briefly in the November circular letter we sent out was a publication called the VHF/UHF Amateur Directory. This brought several requests for additional information. The Directory was published by the

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Amateur Radio Digital Communications, Grant 151

https://archive.org/details/mufigybulletins100unse

57-3

Two Meters and Down Radio Club, Inc., of Los Angeles, and is a listing of the calls, addresses, and equipment of most of the v.h.f. enthusiasts in the country, and a few abroad. Editor Jeff Jefferies (now W5WIY in Waco, Texas) informs us that they can be had by sending $1.50 to Don, W6MMU, who is handling their circulation for the T.M. & D. Club.

That Antenna Bearing Column

Perhaps a word or two is in order about proper use of the ANTENNA BEARING column on our PRP report forms. The idea here is that we want to know whenever a station comes in better from some direction other than the great circle path one. Also, in these cases we want to know just what that direction was, as accurately as your beam-rotating gear will allow. For one thing, this information is often a mighty big help in telling what variety of propagation was involved. In addition, the direction information is valuable on its own account.

Here's how to show this info: When the other fellow is received best with your antenna pointing at him, don't put anything down in the ANTENNA BEARING column. Just leave it blank. However, when you notice your antenna pointing off in some other direction, just write that direction down. Don't worry if you can't tell beam headings to the nearest degree or the nearest ten degrees. That would be nice, of course, but we'll be very happy if you just tell us that a station came in best from -- say -- SSW.

Think You Have It Tough?

The following excerpts from a letter sent us by Bruce, W7WSP, pretty well speak for themselves: "This station operates with a 12AT7-2E26 at 36 watts input -- 25.4 watts measured output -- to a 3-element beam located 4 feet above the communications building at Mt. Hebo Air Force Base, Mt. Hebo, Oregon -- elevation 3400 feet. . . . . Home location elevation 0 feet (on ocean). Locations are less than 5 miles apart, but 23 road miles. . . . . . Mt. Hebo requires a daily drive of 23 miles, 10 of which are straight up from 0 feet to 2300 feet. Since October I have lost my antenna three times as winds have reached 90 knots (105.5 miles per hour). Snow up to 6 feet drifts with ice.

"Just a few lines to let you know what some 7s do to participate in IGY."

Anyone for 220 Mc. Schedules?

Art, K6GGT, sends along some encouraging comments on 220 Mc. activity in his area (San Mateo, California). K6RNQ, W6SUE and K6EDX, he says, now have new 417A converters for 220, along with 5 over 5 beams. The group is gunning for some DX like that involving the California channel 13 TV station which was recently copied in Kansas.

Art is very much interested in 220 Mc. schedules and would like to hear from those equipped and able.

The Big Aurora

The night of March 1st will be well remembered by those who were out-of-doors and happened to look up. If you were and did, then you could hardly miss seeing an exceptional aurora display no matter where in the United States you were located. W0YSU sent us a Fargo, North Dakota, newspaper clipping from which we quote the following:

"REGINA, Sask. -- A red aurora borealis flared in the sky over southern Saskatchewan Friday night, rising to a black-centered corona directly over Regina. John Hodges, Director of the Regina Astronomical Society Observatory, said it was the first red aurora reported anywhere in the world since 1938."

Odds and Ends

Hal, W6JAM, at Long Beach, California, wants to know what the strong silent carriers that he hears on 51.2 and 52.45 Mc. are. Anybody know?

W3TFA, Carole Highlands, Maryland, writes that he's on for most of the auroras using 144.65 Mc. He says he'd like to know whom to look for under such conditions. Tune up a little higher next time, fellows!

57-4

Among those calling us to task for an error in the February I1ER article were I1ER, himself, and W8DX. Mario Santangelli's name is just that, of course, and not Santangelli Mario. It seems that in the rush of bulletin time we went and reprinted a 32-year old misprint! Our last letter from I1ER began: Dear Mr. Mason,! W8DX says that he noticed it because he and I1ER are old friends, Dick having visited Mario's station back in November, 1927, while Dick was a marine radio operator on a run between New Orleans and the Mediterranean.

W8DX also reports on his 220 and 432 Mc. aurora tests. He has attempted 1-1/4 meter aurora QSOs recently with four different stations, but with no luck. In the past he has worked W3LZD twice via this mode, but apparently 144 Mc. conditions have to be really something before the 220 gets through. Dick is trying 432 Mc. aurora tests with W8HRC, 15 miles away. How about some more interest in aurora work on these bands?

W7QDJ, Clearfield, Utah, is now going after aurora and MS on two meters with a new antenna system (as of Feb. 16th). The new skywire has 4 elements on six and 20 elements on two. One objective is hooking up with W0CNM in Grand Junction who is 250 miles away in back of 9,000, 12,000, and several 8,000 foot mountain ranges.

Schedules anyone? W2JJC is looking for some partners who are 400 or more miles from Newmarket, New Jersey, and interested in 144 Mc. s.s.b. or c.w. tests.

K6EDX was especially pleased last month to QSO W4HJQ in Glendale, Kentucky. Why? Because it gave Bob his 50 Mc. WAS after only 9 months and 12 days of working for it. K6EDX also wonders if it's the first Technician 50 Mc. WAS. In the statistics department, Bob reports that he had to work 378 different stations, fill three log books, and have 2750 QSOs to earn the coveted prize.

And still more from Tireless Bob -- he and K6RNQ are preparing to send 50 Mc. gear to CS3AC in the Azores to get him on for next summer and fall. Also on the list to receive gift-gear are FO8AB and representatives from KG6 and KP6.

The World Warning Agency Story

The article about the IGY World Warning Agency, begun last month, will be concluded in the May issue of the PRP News. We had to skip a month in order to carry the Villard TE paper story, and bring you a sampling of the latest PRP reports.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

MPS/chc

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

NUMBER 5 MAY, 1957

THIS MONTH:

MORE ON THE IGY WORLD WARNING AGENCY

BEACON STATION NEWS -- FEATURING A NEW CODE WHEEL DESIGN BY W1CUT

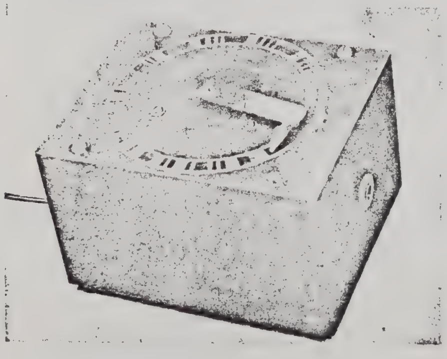
AND THE LATEST PROPAGATION PICTURE

THE IGY WORLD DAY PROGRAM - CONTINUED

Month before last, you will recall, we spoke briefly of the various days and intervals which have been and will be declared during the IGY. First there were the Regular World Days. These will be days for concentrated observation at stations of nearly all types participating in the IGY. RWD have been selected on the following basis: (a) Two consecutive days each month at the full moon; (b) One day near first or third quarter moon, with the exact date shifted to coincide with meteoric activity; (c) Additional days of unusual meteoric activity; (d) An additional control day immediately following the Geminid showers; (e) Five additional days to prevent the interval between RWD from exceeding approximately three weeks.

As we stated previously, a World Meteorological Interval will be an occasion for concentrated meteorological observing and reporting. The IGY will include six WMI of ten consecutive days. An advance trial WMI will occur in June, 1957. Reproduced on page 2 is a portion of the RWD and WMI calendar. Remember that the IGY itself starts on July 1st. The month of June is to be used as an advanced trial period, however, so we have shown the schedule for it as well as July and August. As the time approaches, we will print additional reminders of these special days, since it will be very desirable for all PRP observers to be as active as possible during these times, and to report their results.

LEFT BELOW Here's a clever printed circuit code wheel designed and built by W1CUT of the ARRL Technical Dept. Full details on pages 4 & 5. RIGHT BELOW A view of the antenna farm at W3LZD, Dunmore, Pa. On the right in this shot is a 40-element 220-Mc. array made up of four 10-element yagis having dual driven dipoles. Ted plans to concentrate on 220-Mc. aurora work. His rig on that band runs 650 watts to a pair of 4X250Bs, while his 6BC4 converter has a noise figure of about 3.5 db. Firm skeds are kept with K2GRI and W1VNH, and tentative ones with W8DX, W1JDF, and W4UMF. Who said 220 was dead?



Alerts and Special World Intervals

Besides the RWD and WMI, there will be Alerts and Special World Intervals. These periods will be designated on a day-to-day basis by the IGY World Warning Agency at Fort Belvoir, Virginia. A state of Alert will be called when solar activity is unusually high, thus alerting IGY stations to the increased probability of occurrence of the kinds of terrestrial effects which are observed at the time of solar flares and similar activity. The more outstanding magnetic storms, auroral displays, and related phenomena can be expected to take place during periods of Alert.

During a period of Alert, an SWI may be declared on eight hours notice by the IGY World Warning Agency. Such a notice will be given whenever the probability is high that an outstanding geomagnetic storm, with associated effects, will begin within a few hours. An SWI will continue until terminated by the IGY World Warning Agency. A period of Alert will likewise continue until terminated by the IGY World Warning Agency.

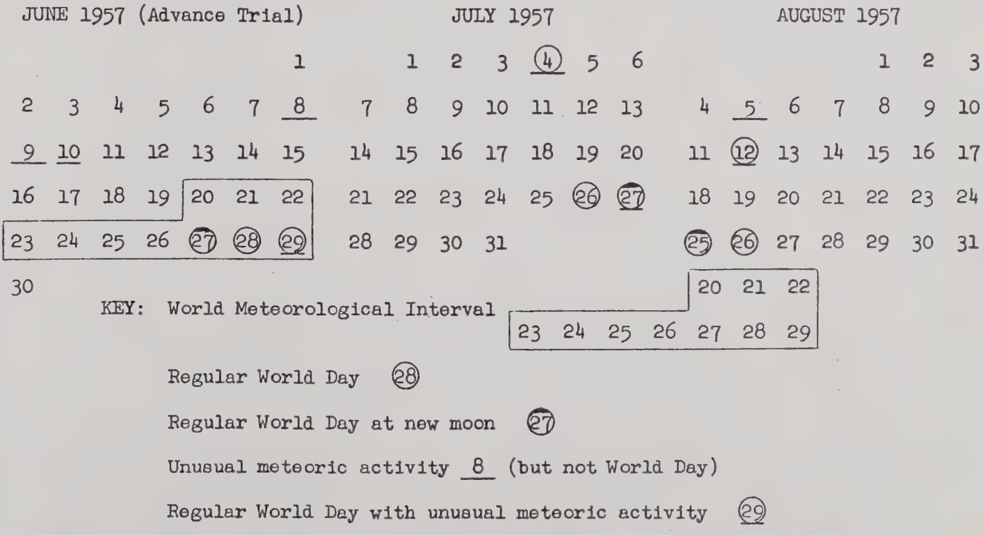
This Agency will issue Warning Messages at 1600 GMT (1100 EST, etc.) daily, whenever there is a state of Alert or SWI. The messages, therefore, will say whether an Alert is started, continued, or terminated, or whether an SWI is to be started, continued, or terminated. No Warning Message will be sent when no state of Alert or SWI exists. The start or finish of a period of Alert is effective when the Warning Message is issued at 1600 GMT or, in practice, upon receipt of the message at each IGY station. An SWI begins eight hours after the Warning Message is issued, or 0001 of the day following. An SWI ends at 2359 GMT, also eight hours after the Warning Message is issued.

Once started, an Alert will be continued either until an important geomagnetic disturbance has occurred, or until the activity in the sunspot region has subsided. The Alert will be terminated when all chance of an outstanding geomagnetic storm seems to have passed. A typical period of Alert will last four to eight days. On the average there will be two or three periods of Alert per month, totaling 10 to 12 days. There will be one or two SWI per month on the average, each lasting from 2 to 4 days.

Warning Messages

The Warning Messages will be issued only by the IGY World Warning Agency, and only at 1600 GMT. They will be standardized text in plain language, and will be numbered serially. A typical message is "AGI GEOPHYSICAL YEAR WARNING NO. 99: ALERT STARTS IMMEDIATELY 03/1600." The warnings will be distributed to all IGY stations

The information below is from the FINAL CALENDAR of REGULAR WORLD DAYS and METEOROLOGICAL INTERVALS during the INTERNATIONAL GEOPHYSICAL YEAR.



KEY: World Meteorological Interval

Regular World Day

Regular World Day at new moon

Unusual meteoric activity 8 (but not World Day)

Regular World Day with unusual meteoric activity

that require them by the three basic methods listed below.

(a) The IGY World Warning Agency will deliver the Warning Message to the world-wide meteorological communication networks, as arranged for by the World Meteorological Organization. Each individual IGY station will arrange for local delivery of the messages from the nearest outlet of the network.

(b) The IGY World Warning Agency will send a direct telegram to all of the other Regional Warning Centers (for example, Tokyo). These in turn will make any necessary special arrangements to get the Warning Message to stations within their regions according to regional plans (telegram, telephone, radio broadcast, etc.).

(c) The IGY World Warning Agency will arrange to have a suitable signal broadcast twice hourly on standard frequency broadcasting station WWV. These notifications will be made in Morse code twice hourly at 19 and 49 minutes after the hour following the radio propagation announcement. Similar broadcasts will be made by radio stations WWVH (Hawaii) LOL (Argentina) and JJY (Japan) if practicable.

In addition, ARRL Headquarters will be notified by telegram of all Alerts and SWI. We will then broadcast the information over W1AW in the form of a special bulletin that evening. W1AW may also carry reminders of the Regular World Days. Radio amateurs, then, will have two handy sources of the Warning Messages--WWV and W1AW. We hope that all hams, and especially the PRP observers, will take advantage of this information, and make an effort to be active at these times.

Trial Weeks

Because of the importance of these messages for the success of the SWIs, trial weeks are being held each month from January to June 1957 (from the 10th to the 16th, both days inclusive, of January, February, March, April, and May 1957). The trials are only to test the efficiency of the communication arrangements; and, therefore, during these trial weeks IGY stations are not expected to make any special observations or try out their observing programs. Note also that WWV and W1AW will not be broadcasting Alert and SWI information during this period.

Other Information to be Exchanged

IGY observers of many countries will require announcements of the launching of each earth satellite and also post-launching information about its orbit, both for radio tracking of the satellite and for optical observations. At least some parts of the communications system which has been developed for the distribution of Alerts and Special World Intervals may therefore be of further use in facilitating observations of the satellites.

Summaries of current observations of geomagnetic data, solar flares, fade-outs, aurora, etc., will be available on a rapid schedule to every IGY station requiring such summaries. The Regional Warning Centers will be responsible for assembling the necessary data, and each will make arrangements to satisfy the needs of its own region. Several Regional Warning Centers plan to have regularly available information about current or expected geomagnetic activity. Some of these Centers also regularly make forcasts of radio propagation conditions. Both of these types of forecasts will be handled on a regional basis.

MORE ABOUT BEACONS

Our comments on the subject of beacon transmitters in recent issues of the News have stirred up quite a bit of interest. We've accumulated considerable material on "how-to-do-it", and a number of individuals and groups are now working on the problem. This month we're going to make a few more comments, and then present two features you should find interesting. One is a brand new idea for an automatic keying device. The other is a list of all the operating and proposed amateur beacon stations with which we're familiar. But first -- the comments.

One question to come up has been that of the best frequency for our PRP beacons. After considerable thought, we have decided to suggest the National Calling Frequency of 50.55 Mc. as the six-meter beacon frequency. The spot is a good one from the QRM and TVI standpoints, and we feel that its use for beacons will do more good than harm to the calling frequency idea. At least, it will make fellows listen on it! 8425 kc. surplus crystals to put you there are readily available, and they usually come out far enough apart so that one station could be told from another during a widespread opening.

[MAY 1957]

At this point we'll say no more on the subject, but merely sit back and wait for the arguments! On two meters, the more-or-less obvious spot is in the 144.8-145.0 region. This takes into account the most used frequencies and also the tuning ranges of some of our more selective receiving setups. We don't have any specific spot to recommend. Any suggestions?

Since there must be a licensed operator present at all times a beacon is running, and because a reliable schedule is more important than an extremely extensive one, we are recommending that fairly moderate hours be set up by stations, at least at first. The important point is to keep them! That way our negative reports will mean something.

Another point -- beacons are important, but not all-important. During a band opening, for example, the beacon operator can make more of a contribution by taking off the automatic keying and getting on and working stations. It is well in any beacon schedule to include periods every quarter or half hour for monitoring the band for replies. This is very fortunate, since it prevents extreme fustration during band openings on the part of the six-meter beacon man lacking WAS!

That's enough talk for this month, I guess. Now on to our beacon features!

A PRINTED CIRCUIT CODE WHEEL

by E. Laird Campbell, W1CUT

You will find the code wheel unit shown in our page 1 photograph very simple and inexpensive to build. Don't let the printed circuit angle scare you! Though a bit novel, construction should be a lot of fun, and you will be very pleased with the results.

The design principle is simple enough. Characters and spaces desired are laid out with etch resistant ink on a piece of copper clad phenolic board. This copper laminate board is then immersed in an etching solution which removes all the copper except that protected by the etch resistant ink. The ink is then washed off, leaving the board with a copper facsimile of the original characters and spaces.

In actual operation, a wiping arm connected to a slow speed motor moves across the copper characters. As the arm contacts a character a circuit is completed, and this may be used for transmitter keying.

Construction Details

First, cut a piece of copper laminate board (6" x 4 1/2" XXXP copper laminate -- Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y., type PC-B) to fit the top of a steel utility cabinet (5" x 4" x 3" black ripple steel utility cabinet -- Lafayette Radio No. ICA 3811). Be very careful when cutting this material since it is brittle and cracks easily. A hack-saw with very fine teeth makes a good cutting tool. Next, drill the holes in the board required for securing the board to the chassis, mounting the motor, and allowing motor shaft clearance.

The motor used in the original code wheel is a small unit taken from a window advertising display. It has a speed of 4 r.p.m., and it was obtained simply by asking the store manager for it when the display was discarded. Another possibility would be a Haydon 1600A 1-r.p.m. timing motor. This is available from Concord Radio, 45 Warren Street, New York 7, N. Y., and is their part No. RN-5-H160-25. The price is $1.39.

Any motor will work, of course, so long as it fits in the cabinet and has a speed of a few r.p.m. An old clock motor would be a natural for the job -- with the second hand used as the wiper arm. The arm can also be made from a piece of aluminum or any stiff piece of metal. The tip of the arm that actually touches the copper should be made of a flexible material. A piece of tin can soldered to the end of the wiper arm is flexible enough to do the job.

The desired characters and spaces must be laid out on the copper laminate in the fashion shown in the photograph. It is a good idea to do this first on a piece of paper; then copy it, using carbon paper, onto the laminate.

If space allows, and you take pride in your keying, the following relationships may be of help in the layout process. A dash is equal to three dots in length. An element space (between dots and dashes) is equal to one dot. A character space should be equal to three dots, while a word space should be equal to seven.

[May 57]

Next the pattern is gone over with etch resistant ink (Liquid resist ink -- Lafayette Radio No. type PR-L). This can be done with a standard quill type pen or with a "speed-ball" pen, obtainable at most Five and Dime stores. It will probably take a few minutes to get used to writing on the copper. If any mistakes are made, just let the ink dry, and scrape off the error.

When the design has been completed, check the pattern closely for any small spots where the ink is thin or has not completely covered the desired area. A sharp pointed instrument is good for going over the edges of the pattern so that when the ink is removed the copper will have nice, straight edges. If any of the characters have fuzzy edges, it may show up later in the keying.

The unwanted copper must now be etched from the board. This should be done in a glass pan. It is a good idea to do the etching on some newspapers since the etching solution will stain whatever it touches. This goes for your hands, too, so be sure to wear rubber gloves or use tongs.

Place the board in the etching solution (Etchant solution -- Lafayette Radio No. type PE-3) with the copper side up. The solution will slowly dissolve the unwanted copper. If you wish to speed up the process, agitate the solution and brush the board with a clean paint brush. The etching process usually takes about 10 to 15 minutes. Now, wash the board in water to remove all the etching solution, and remove the etch resistant ink with a solvent such as fingernail polish remover.

At this point, the motor can be mounted on the laminate board. Secure the wiper arm to the motor shaft, and connect leads from the arm and any point on the etched copper ring to the phone jack mounted on the cabinet side. Hook up an a.c. line cord to the motor, and you're ready for automatic keying.

PROPOSED AND OPERATING BEACON TRANSMITTERS

50 Megacycles - Now Operating

W4HHK, Collierville, Tennessee: Now operating with 30 watts, A1 emission, on 50.55 Mc. Antenna is 4-element yagi aiming 30 or 60 degrees. Keying used is: V DE W4HHK (7 second dash), then repeat. For about the first three weeks in April operation was with A2 on 50.4 Mc. Exact schedule unknown.

W5AJG, Dallas, Texas: Now operating intermittently with 25 watt RASO beacon rig on 50.1 Mc. Antenna is vertical dipole, 65 feet high. A1 emission with keying as follows: (Long dash) W5AJG W5AJG, then repeat at 5 w.p.m.

50 Megacycles - Being Planned or Constructed

W4AYV, Umatilla, Florida: Interested, but no definite plans as yet.

W4FBL, Jacksonville, Florida: Will reactivate 2E26 RASO beacon transmitter. Antenna to be 3-element beam or ground-plane.

W5KU, Schreveport, Louisiana: Plans a 50 watt rig feeding ground-plane antenna 40 feet high. Automatic A1 keying, probably on 50.55 Mc. Equipment under construction.

W7KKN, Tacoma, Washington: Interested (also in 144 Mc.) but no definite plans as yet.

144 Megacycles - Now operating

OZ7IGY, Copenhagen, Denmark: Now operating with about 100 watts to a 12-element long yagi pointed north. Frequency is 144.05 Mc., and keying is A1 as follows: OZ7IGY (eight dots) OZ7IGY (eight dots) (15 second dash) (seven dots), then repeat at about eight w.p.m. Here is the operating schedule for May: May 1 - 14, 1800-2000 GMT; May 15 - 31, 1825-2025 GMT.

144 Megacycles - Being planned or constructed

W1VSE, New Britain, Connecticut: Plans an 80 watt rig feeding a beam antenna pointing north. C.w. emission will be used, and operating hours will be about 1700-2030 EST.

[May 1957]

W4FJ, Richmond, Virginia: Plans a beacon on 144.95 Mc. Antenna to be a long yagi pointing north for aurora checking and up the seaboard for tropospheric work. The rig will be run ten minutes at the start of each hour.

220 Megacycles - Being Planned or Constructed

W2ZUW/0, Marion, Iowa: Has proposed a 220-Mc. beacon. Nothing definite as yet.

TRANSEQUATORIAL SCATTER DEPARTMENT

How About Some Recordings?

One of the more curious things about TE work is the rapid fade or "hollow sound" which the signals so often possess. To aid in their studies of this propagation mode, Stanford University's Radio Propagation Laboratory would like very much to obtain some recordings of voice or c.w. transmissions in which this effect is pronounced. Through the use of a frequency-amplitude-time analyzer, it should be possible to learn some very worth-while things about TE from such recordings.

The sample need not be a long one, or even especially hi-fi. Almost anything will do. What they do need to know are the radio frequency, the time of day, and the station(s) involved. For c.w. reception, the BFO should be set to any convenient frequency -- say 1000 c.p.s. The radio frequency can be 21, 30, or 50 Mc. The main requirement is that the signal show a pronounced hollow sound or flutter fade.

The Laboratory will be very happy to reimburse anyone sending in such records for the cost of the recording material used, and for postage. They will return the recordings to the senders prepaid. So -- how about it, gang? If you have any fluttery TE signals preserved on tape, wire, or disk, please get in touch with Prof. O. G. Villard, Jr., Radio Propagation Laboratory, Stanford University, Stanford, California. If you've a recorder but no recordings, why not keep it hooked up alongside your receiver?

Here's Something To Listen For

Also from Stanford, comes word of a back-scatter sounder soon to be operating continuously in Puerto Rico. It is being operated by Dr. Braulio Dueno of the University of Puerto Rico, and should be of special interest to our observers in Chile and Argentina. Present indications are that the signal from this sounder regularly comes down in the vicinity of Buenos Aires without any intermediate stops.

The call letters of the sounder are WW2XAF, and its frequency is 40.68 Mc. The pulse rate frequency is 9.37 c.p.s., the pulse length is 2 milliseconds, and the peak power is one kilowatt. The antenna is a rotating three-element yagi which search lights back and forth, executing one sweep per minute, roughly. Call letters are keyed about every 15 minutes, the PRF being raised to 18 c.p.s. while keying takes place. Operation will be intermittent until May or June, when it is hoped that continuous operation can begin.

We suggest that every station in or near the affected area make it a point to look for this signal especially between 1400 and 2200 local time. It should serve as an excellent TE opening indicator. In addition, please note its reception on your PRP form. These reports will be very valuable for correlation with echoes seen on the scatter-sounder.

PROPAGATION RUNDOWN -- MARCH 16 - APRIL 15

by Constance Campbell

March Two-Meter Activity

144 Mc. monitoring was very gratifying indeed during the last half of March. Auroral reports for practically every night of this period were submitted, but the most concentrated activity was in the evening hours of the 27th and the early morning hours of the 28th. Many observers reported auroral signals on the 21st, 24th, 29th, and 30th, but, as we said, most of the other dates were included, too.

W0URO sent in a report form covering auroral activity on the 21st, 24th, 26th, 27th, 28th, 29th, and 31st! W1REZ wasn't far behind him in the number of evenings

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he worked stations via auroral propagation. A noteworthy report was sent in by W9FVJ covering auroral operating time on the 28th, 29th, and 31st. He heard such stations as W0IFS, W9GAB, W8PT, W8DAX, and W8URO. W0IFS, W9WOK, and W0RSP were also heard by W0YSJ on the 27th and 31st.

Between 1924 and 2110 EST on the 27th, W8DX worked W2WZR, W3LZD, W2BLV, and W8PT. He reports that auroral signals faded out at about 2110. W8AXX, W3GKP, and W8JUV were very active on the 27th, and also reported the fading of signals about 2100. Many other reports show their observations to be correct. This fact might have discouraged some -- but not our observers! The majority of them were still at their posts when the band opened up again about midnight to 0100 EST. We were pleased to see that their perseverance paid off, for auroral activity continued into the early morning hours of the 28th. Between 2012 and 2055 EST on the 27th, W2CBB heard W1AZK, W2BLV, and W8BAX. At 0006 on the 28th, when the band opened up again, he heard W8KAY, K2CEH, VE3DUU, and worked W8URO, VE2FF, and W9EQC. He operated until 0309 when he reported: "No more signals heard -- Reason: Fell asleep at operating desk!!" He checked the band again at 0820 with no luck. We were curious -- did he sleep at his desk all night?

W1HDQ added a very interesting comment to his report form which we thought you might be interested in reading. He says that on March 29th "a strange and hitherto unnoticed condition prevailed. The stations farthest west actually peaked with the beam more to the north than did the stations nearer. This was checked several times, and it was definitely established that W9EGH and W8BAX were better at straight north, while the W2s and W3s and W4AO, Falls Church, Virginia, showed a sharp peak just slightly west of north. This was on the 29th only."

And On 220 Mc.

Some auroral propagation was even noted on 220 Mc. K2GRI heard W3LZD on the 27th between 1935 and 1950 EST, and on the 29th of March he heard W3ARW at 2135. Both signals peaked in with his antenna due north.

The 50-Mc. Picture

Sporadic-E activity on 50 Mc. was conspicuous by its complete absence. Not one report on an E opening was received for the last half of March. However, aurora, F2 skip, and meteor scatter work made up for this lack.

Our reports on meteor scatter schedules seem to come in in greater quantities each month. K2ITP and W4IKK each submitted reports of their MS contacts. W6VIG, W7QDJ, W6NLZ, W1SUZ, and W2MEU also helped us out with their MS reporting.

W8HXT and W1LGE sent in long lists of stations that they heard and worked via aurora on the 27th and 29th. W1RFU heard W3HFY, W8HXT, VE3BBX, and others on the 27th during the same period of time that the 2-meter band went dead -- shortly after 2110. VE3ANY, W2YIK, W8LPD, W2FCG, and W8MVN were among those heard by W2IDZ on the 27th between 1830 and 2150.

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W5s, W6s, and W0s noticed an F layer opening to Argentina on the 28th of March about noontime. W5FXN worked LU7AT, LU9AL, and LU1BW. K6GTG heard LU9MA and, in addition, LU7AT, LU9EV, LU4AY, and LU3DD. This opening was also caught by W0ZJB, W0MVG, and W0EDM.

CO2ZX reported that on 50 Mc. "band conditions were bad with no openings" from his location. He tells us that he's just put up an Allience automatic rotor to his 3-element beam. He was rotating it by hand but now has life pretty easy!

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There was a plentiful supply of transequatorial scatter work for the last half of March. CX1AQ heard TG9JW on March 16th between 2232 and 2234 his time, and on the 18th he heard PZ1AE between 2150 and 2155. TG9JW, himself, sent in a goodly number of TE reports. LU7AT tells us that he heard JA7BY and JA1ATF on the 17th about 2120 to 2230 LU-time!

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Early April Reports

Just a few words now about the propagation picture during the first two weeks in April. Not all the reports have been received as yet, so our information is necessarily sketchy, but we can give you a general idea of the doings for this period.

[May 1957]

A brief 50 Mc. sporadic-E opening on April 11th around 2100 EST was noticed by W9MFH in Ravenswood, Indiana, and W4TLW in Knoxville, Tennessee. They both received the signals of CO2ZX and CO2XZ. We're sorry to say that again during this period, as in the last half of March, sporadic-E activity was quite limited.

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A good example of TE work was submitted by W5EXZ. On April 7th he worked CE3CC and heard CE3QG and LU9MA from 1945 to 2010 CST. Again on the 9th he heard 209 CE3CC and worked CE3QG about the same time in the evening. A little later in the month, K4JJA worked LU7DDG on the evening of March 11th between 2045 and 2100 EST. W4LLD, W4TLW, W4TDZ, and W4IKK were in on this one, the latter hearing LU7DDG also. K4MBM mannaged a very nice contact with LU3DD, Buenos Aires, at 2040 CST.

Those LU observers really have it, by the way. LU7AT reported DX of one sort or another every day, April 1st to 15th. The band was open half the night too. All in all, about 15 countries were available to be worked in the space of two or three days!

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W6BWG pointed out some excellent F2 layer work with his April 7th QSOs with LU7DDG, CE3QG, LU9MA, and CE3CC. W6ABN set up his portable station in Palos Verdes Hills -- altitude 500 feet, overlooking the Pacific Ocean. He had a good workout on the 7th, also, and attributes his good luck along this line to his excellent location.

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We received some report forms covering auroral work on 50 Mc., too. Most of these centered around the evening hours of April 15th. W2IDZ worked K2MUI, VE3AIU, K2UOT, and VE3BBX. W2WZR also submitted a long list of heard reports for the same period of time. In the early morning hours of April 10th, W4IKK came upon a very 173 good auroral opening by listening to KA2XBA in Cedar Rapids. KA2XBA peaked in at 330 degrees from his location in Rome, Georgia. However, he didn't get in much work and says that he is contemplating the use of the call, JA4IKK, in order to get some answers to his CQs!

The best night for auroral propagation on 144 Mc. seemed to be April 15th. W8DX heard K2GQI, W2CXY, W2VDI, W8KAY, and W9EGH. All this was between 1850 and 2105 EST. Also active during this opening were W8EHW, W8PT, W9JAQ, W2AZL, K2HOD, and VE2FF.

We just received some interesting news about auroral work on 220 Mc. W1RFU worked W8IJG on the evening of April 18th. The contact was made without the aid of any prearrangements on a lower frequency!

CERTIFICATES TO BE AWARDED FOR CONSISTANT REPORTING

Of the approximately 900 registered PRP observers, a little over 300 have sent in one or more reports of stations worked and heard. The majority of these 300-plus have been reporting very consistently. From the other 600, we are sorry to say, we have received nothing but their registration forms. We feel it's about time, therefore, to reward the stations who have been taking an active part in PRP.

The details of the reward are not firm as of this writing, but we plan to base our system on three-month periods, broken down into the regular half-month reporting periods. A certificate will be given to any station submitting six half-month reports during any three month period. These reports can be broken down in any way you like between bands, just so long as six of them are submitted during the three months. For example, one station might qualify for the certificate by submitting six consecutive 50 Mc. half-month reports and none for 144 Mc. or any higher band. Another might qualify by submitting three 50 Mc. reports and three for 144 within the same period. If you've satisfied these requirements during the first three months of PRP, congratulations! You've won yourself a certificate! If you havn't, why not get started now on working toward this award?

What happens after you've got your certificate? Very simple. For each three month period during which we receive six reports from your station we'll send you a handsome endorsement sticker. There will be a place for these stickers on the certificate, and the more of them you have affixed when the PRP smoke clears away, the better the job you've done. Perhaps we should say, though, not to be satisfied with the minimum number of reports -- especially if you operate more than one band. We have a special recognition in mind for outstanding observers. That goes for quality of reporting as well as quantity, by the way.

[May 57]

Wherever there is a certificate to be won, there must also be a few rules along with it. In this case the rules are rather simple. Actually they are nothing more than the suggestions for good reporting which we have been passing along for the past several months. Obviously, only reports which are correctly made out so as to yield useful PRP data can be considered for the above awards. Below, we'll try and summarize the requirements for a useful report.

First of all, it must be on a PRP report form. That's simple enough. Next, reports for different frequency bands must be on separate forms to qualify as more than one report. We won't quibble about running over a day or so on either end of a half-month period, though. Nearly all of us have caught ourselves entering a first-of-the-month report on last month's form. Please remember, however, to include at least your call, the band, and the time system on the top of each sheet. After having to do some detective work to find out whose #&!$* report it is, we might not feel much like giving you credit for sending it in.

Now as to what in the way of contents constitutes a useful report. Most important, it should include at least one worked report, heard report, or negative report complete with specific time and date. This is the most common single reason for report disqualifications -- the omission of the date and time when something or nothing happened. Don't say we didn't warn you!

Of course, it goes without saying that we hope your report will contain more than one item, but we've tried to point out the minimum requirements. Note that these rules are not the kind designed to make the job more difficult. Each is there only to insure that you provide the information we need. We, in turn, can then see to it that maximum results and information are derived from PRP. So, let's go, gang! To those who have been reporting so faithfully, keep up the wonderful work. To those we haven't heard from, there's no time like now!

FROM HERE AND THERE

Doc, W3TIF, who needs only Montana for his 50Mc. WAS, wants to know why more of the 800-odd hams in that state aren't on six. W7CJN in Butte and W7JRG in Billings are Montana's only PRP representatives. How about a few more? Doc suggests that a station in southeast Montana would easily do the trick since he hears North and South Dakota frequently.

The following note on the Alaska situation comes to us from VE3ANY/W8, who in turn got it from W8STX. "KL7BT's XYL tunes six meters from 1000 to 1400 Alaska time (1500 - 1900 EST). KL7BT is on the air during his lunch hour from 1200 to 1300 Alaska time (1700 - 1800 EST). If his XYL hears anything when he is not at home, he can be on the air in five minutes, so he suggests calling him instead of CQ at any time the band appears to be open to that area. KL7BT's QTH is Summit, on the railroad between Anchorage and Fairbanks, approximately 60 miles ENE of Mt. McKinley which he can see on clear days."

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Here's an interesting quote from a recent letter of ZE2JE's. He's the fellow in Southern Rhodesia whom we mistakenly referred to as ZE2JP a couple of months back. "Came on 50 Mc. for the first time July 17th, 1956, and worked ZE2KM on sked 35 miles distant. Our two stations kept almost consistent daily skeds at 1510-1540 and 1700-1830. During these times the band was tuned and antennae rotated. Various TV emissions were noted i.e., British, German, etc. Some were strong, and they were mainly during the later listening period. These were most consistent until approximately the end of October when they disappeared, and then only the stronger stations were occasionally heard until about Christmas.

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"W3AKZ QSLed as having heard me the 28th of October. The report was 4-6 at 0950 EST. About mid-December, I heard and called GD3GMH, who was working Ws cross-band 28/50. He heard me but couldn't copy my call, no doubt due to beaming on W. This was when northern TV was strong (1530).

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"Skeds and listening continued. Endeavors to contact Ws on sked were made via 28 Mc. with no luck. It was not until February 18th of this year that I heard the rise in m.u.f. towards the U.S.A. up to 50 Mc. I alerted Ws on 28 and 50 simultaneously, and reports follow on printed sheets." As we all know, one of the results was a contact with W8LPD for the first 50 Mc. work between Africa and anywhere in the Western Hemisphere.

Jeff, XE1GE, has the following to add to TG9JW's remarks month-before-last about the Montevideo station CVJ: "I have been observing this station for almost 1 1/2 years, and it is very useful to us. I would like to add to Jack's report about c.w. It's a steady (AM) carrier and they modulate it whenever they call the trolley repair gang. This steady carrier is very useful to us as you can well imagine."

Paul, W4HHK, passed along a good thought on reporting recently. As he points out, antenna headings for back-scatter and auroral work frequently correspond, in his area, to the true headings. In such cases, our "Antenna Heading - (if not direct)" really doesn't apply. It would be helpful if observers would log all antenna bearings, therefore, for aurora and backscatter work only.

Also -- with daylight saving time coming up in many areas, it's more important than ever to indicate what time system you are using for the entries on your PRP report. Be especially careful on the changeover date to show this fact, or, better still, use a second sheet to list contacts after the time shift.

Doubled again -- the size of the PRP office staff, that is! We're pleased to announce this month that two new clerical assistants have come to work at PRP Headquarters. They're Mrs. Margaret Bragdon and Mrs. Hazel Horan. Margaret has been hard at work these past few weeks building up our file of latitude and longitude coordinates for PRPers around the world. Hazel will be operating our card punch machine shortly, putting our PRP data into their final form.

We hope you've enjoyed our large economy size bonus issue this month. It came about because there was just too much material which was important or had already been held over to fit on our usual three pages. Don't forget to send in your own news items and pictures! We want and need them -- and also your reports.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

MPS/hwh

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

NUMBER 6 JUNE, 1957

STILL MORE BEACONS—

FROM YELLOWKNIFE TO CAPE ELIZABETH!

TRANSEQUATORIAL SCATTER AROUND THE WORLD

WORLD WARNINGS TO BE AIRED BY WWV AND W1AW

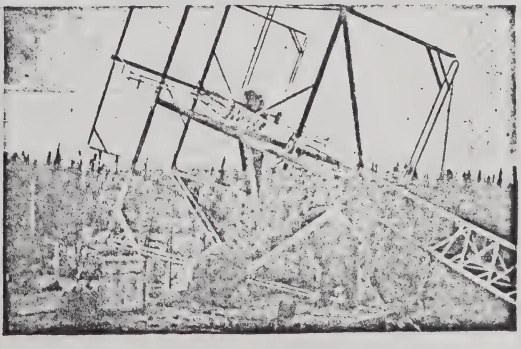
ABOVE Thought you might like a peek at the "Miss Universe" QSL now being used by the Associated Radio Amateurs of Long Beach, California. W6JAM reports that they (the cards) will be sent to anyone working Long Beach on any band. The fact that these were supplied by the Miss U. Contest Committee may give other clubs an idea for exploiting their own local phenomena. The A.R.A., by the way, will be the host club for the Southwest Division ARRL Convention being held August 16, 17, and 18. See you there!

FROM THE NORTH

As part of Canada's contribution to the IGY program, the Defense Research Telecommunications Establishment is now operating two transmitters which should be of considerable interest to observers in their general area. Located at Yellowknife, Northwest Territory, the rigs deliver some 700 watts on 38.07 and 49.99 Mc. The antennas used are of the double-stacked square loop type, and provide omnidirectional, horizontally polarized patterns. Our lower right-hand photo shows one of these arrays, and was taken during its installation.

The main purpose of this experiment is to study the occurrence and movement of ionospheric irregularities in the vicinity of the auroral zone. A ring of receiving stations will be set up at a distance of about 600 miles from the transmitters. The sites picked include Baker Lane, Churchill, Banff, Saskatoon, and The Pas. By combining the records from these several stations, it should be

BELOW LEFT The neat and complete station of JA1EL, Tokyo. "Nob" uses a 2E26 and 3-element yagi setup on 50 Mc. BELOW RIGHT Installing one of the stacked square corner arrays for the D.R.T.E.'s transmitter at Yellowknife, N.W.T.



[June 57]

possible to follow the motion of scattering regions in the ionosphere. Useful information about sporadic-E, meteor ionization, and auroral effects is also hoped for.

The transmissions are unmodulated except for four timing breaks per hour: three of three minutes duration commencing at 15, 30, and 45 minutes past the hour, and one of five minutes duration commencing at 59 minutes past the hour. PRP will welcome reports of reception of the 49.99 Mc. signal via aurora, sporadic-E, or ionospheric scatter. Use the regular reporting scheme, and mark "Yellowknife" on the form. Who'll be the first PRPer to hear this one?

ADD THESE TO YOUR BEACON LIST

Four more regularly operated, 50-Mc. region transmitters have come to our attention this past month. Two are operated by amateurs; two are of the commercial variety. All can be helpful in making our PRP observations more complete.

K6GTG, Arlington, California

Here's a high power job for you scatter fans! Bill, K6GTG, runs 950 watts on 50.008 Mc. feeding a six-element beam, 80 feet above ground. The operating time is from 0200 to 0600 PDST with beam east, and from 0601 to 0700 with beam north. This is six days a week; no transmissions are made Sunday morning.

Emission is A1 with keying as follows: VV DE K6GTG K6GTG QSL. The speed is about 25 w.p.m. Bill will set up a sked with any stations that copy his transmissions and let him know the desired time.

ZS2PE, Union of South Africa

Van, ZS2Y, of Newton Park, Port Elizabeth, Union of South Africa, writes that his group has just received permission to run a beacon station on 50.230 Mc. Operation will start about the middle of June, and the beacon will send out the club call, ZS2PE, followed by a dash. For the time being, operation will be from Van's home QTH using a four-element yagi and 100 watts.

The schedule will be from 1100 to 2000 GMT (0700 to 1600 EDST) daily with breaks for listening, and from 0700 to 2000 GMT (0300 to 1600 EDST) on Sundays. Eventually, it is hoped that the beacon can be transferred to a close-by mountain top site and run continuously.

More About CVJ, Montevideo, Uruguay

Past issues of the News have carried comments by TG9JW and XE1GE about how useful station CVJ is to them as an indicator of TE openings. Wanting to find out a bit more about this Montevideo station, we wrote to observer CX1AQ. It turned out that we really picked the right man! Mauricio lived face to face with the CVJ antenna for just about 10 years. During that time, he points out, it was no trouble to receive CVJ by tying two wires of different kinds together. He even heard them when his teeth touched a spoonful of soup!

Getting back to the present, CVJ operates on 49.370 Mc., and their vertical dipole is located on the top of the Municipality Building in the center of Montevideo. It belongs to the local transport administration which deals with bus and trolley lines in the city, and its function is to carry instructions to their repair cars. Operation is 24 hours a day except on a very few occasions. Normal emission is a plain carrier. Modulation is applied only when there are instructions or orders to be given to the repair cars.

Every time the modulation comes on, the operator gives the time and says, for example: "Atencion mecanico ________hora______" and then proceeds with the instructions. From time to time the operator announces: "Estacion CVJ de la A.M.D.E.T. -- hora ___," but this is done very few times a day.

And One In Mexico

Word of this station comes to us from XE1GE, Jeff. Just as CVJ points out the TE openings for stations in Central and northern South America, many LUs, CXs, and CEs listen for a Mexican FM link station operating on 50.5 Mc. This one is located about 75 miles east of Mexico City at an altitude of about 13,000 feet. It carries the sound for channel 3 programs in that area.

[June 57]

IGY WORLD WARNING INFO AND HOW TO GET IT

Why

The IGY World Warning Agency and their Alerts and Special World Intervals were all discussed at some length in last month's News. Recall that the SWI are to be periods when something of special interest (such as high solar activity) calls for a stepped up observing program. The alerts, basically, are periods of readiness for this observing. PRPers, like all others gathering data for IGY, should be especially active during the SWI. For this reason, we present here the two sources of this information most convenient for amateur use. We hope you will make use of them, and that you will let us know (a note on your regular report form will be fine) the system which you prefer.

WWV

Since the latter part of May, station WWV, near Washington, D.C., has been sending out the Alert and SWI information in coded form. Frequencies, of course, are 2.5, 5, 10, 15, 20, and 25 Mc. Times are 4 1/2 and 34 1/2 minutes past each hour. The information follows a code announcement of the station call and the time in G.M.T. These spots are equivalent to those at 19 1/2 and 49 1/2 minutes past the hour used for the regular propagation announcements. The following should make the meaning of the code groups used fairly clear:

AGI - AAAAA - - - - - - - - - - - - indicating state of Alert.

AGI - EEEEE - - - - - - - - - - - - indicating no state of Alert.

AGI - SSSSS - - - - - - - - - - - - indicating Special World Interval will begin at 0001 G.M.T. of following day (2001 E.D.S.T. of same day).

AGI - (three extra long dashes) - indication Special World Interval in progress.

AGI - TTTTT - - - - - - - - - - - - indicating Special World Interval terminates at 2359 G.M.T. (1959 EDST) of same day.

W1AW

We are pleased to announce that, through the cooperation of the ARRL Communications Department, the Alert and SWI information will be carried by Headquarters Station W1AW beginning on or about June 15th. This should make things a good deal easier for those of us having receivers not compatible with WWV. W1AW's c.w. frequencies are as follows: 1885, 3555, 7080, 14,100, 21,010, 50,900, and 145,600 kc. On phone, look for them at; 1885, 3945, 7255, 14,280, 21,330, 50,900, or 145,600 k.c.

The announcements will be made during the Official Bulletin periods. Sunday through Friday, these are at 2000 (EST) for c.w., and 2100 for phone. On Monday through Saturday there are sessions at 2330 (phone) and 2400 (c.w.). The exact format of the IGY messages is not fixed as yet, but it will probably read something like the right-hand column in the table above. We urge all observers to make use of this W1AW service, and to let us know what you think of it.

RWD for June

Remember that the IGY Regular World Days for June fall on the 27th, 28th, and 29th.These will be days for extra observing activity around the world. Let's make that true for PRP too. The first RWD in July falls on Independence Day. We shouldn't lack for activity then!

ON THE BULLETIN BOARD

SM To Get Six

Sweden will have the use of 50.0 to 50.5 Mc., effective June 1st. This news comes from Gunnar Lonning, SM5ANY, who is Secretary of Sveriges Sandare Amatorer, the Swedish amateur society. Authorization is to be on an individual

[June 57]

permission basis, and will run until December 31, 1958. Emission may be A1, 2, or 3. All requests are handled through SSA.

Oahu Calling

KH6CCZ reports that there are four stations on the island of Oahu, all keeping a close watch on the 6-meter band. They are himself, KH6NS, KH6BRJ, and KH6PP. They're listening in the first 300 kc. of the band, and transmitting in the first 150 kc.

W4ZZ/Tennessee

Brownie writes "that W4ZZ will be operated at Camp Creek Bald Fire Tower on the Tenn.-N. C. line over the weekend of ARRL Field Day, starting on Friday, June 21st. I hope to concentrate on 144 Mc. to give those in the eastern U.S. a chance at Tennessee (that is, those who haven't worked W4HHK or W4RFR). Most operation will be on 144.45 phone and c.w., but will also work 50 Mc. The location is about 30 miles NNW of Asheville, N.C."

Bottles For Bottles

As we all know, 50 Mc. operation has been authorized in CT1, 2, and 3. The problem now is getting stations on the air. This is more severe than in some other areas because v.h.f. is brand new to these parts. CT1CO, Manuel Antunes, writes from Portugal that he has a 50 Mc. converter and antenna assembled and ready to go. The transmitter r.f. section is a different story, however. To make use of his h.f. rig power supply, Manuel would like to use a pair of 4-125As, 4E27s, or perhaps 4-250As. These are well nigh impossible to get hold of locally, and their European counterparts pose a budget problem. No ordering them from the U.S., of course, because of the dollar situation.

Manuel wonders whether any hams would be willing to part with some tubes and sockets (new or second hand). The same goes for an antenna rotator, since his beam must be quite unaccessible from the shack. He can't pay for these items, but says he could manage to send a few bottles of Port Wine, Madeira wine, or brandy. For particulars, write: Manuel Antunes, CT1CO, Avenida Luis Bivar, 77 - 4, Lisbon, Portugal. Incidentally, Manuel expects to run his rig part-time as a beacon, using an already constructed automatic keyer.

Do You Have A Recorder?

As noted last (and this) month, recordings of transequatorial scatter propagation are being sought by the Radio Propagation Laboratory of Stanford University. There is a possibility that this idea might be extended to the rest of PRP. That is, we would collect short samples of all propagation types by transcribing from originals sent in by observers. To help us decide about including this feature in our project, we'd like to know about how many of you have recorders and would be willing to use them in this connection. We'd appreciate it if you would answer this question on your next PRP form. Thanks!

50 Mc. In Poland

We've just received word from Wes Wysocki, SP2DX, of Gdansk, Poland, that he has been granted permission to use the 50-Mc. band during IGY. Wes is already active on 2 meters, and expects to put about 100 watts on 6. He's looking forward to working the U.S. and Japan next fall and winter.

Look For Africa

Van, ZS2Y, came through earlier this month with the request that U.S. and South American stations keep on the lookout for possible African contacts in the early morning, our time, or around 1200 GMT. He reports U.S. FM phones up to 46 Mc. have been coming in lately. ZS2PV heard two W stations on 50 and 50.1 Mc. ragchewing on March 30th. Let's remember that African 50-Mc. stations often have no other v.h.f. activity closer than 500 miles. They usually go all the way with automatic receiver tuning devices and consistent operating. Let's do our part!

Another Schedule-Seeker

W7VHS, Ogden, Utah, is putting on 200 watts of 50 Mc. c.w. with the idea of going into scatter work. What he's after now are some early morning skeds. He'd also like some information on high gain beams or a reflector-type array for six.

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Now Hear This

Just received word from W1REZ that Fairfield, Connecticut will be on the map with a rather potent 144 Mc. beacon setup. Ray built the printed circuit keyer described in last month's News, and will use it to key his 600 watt rig on 144.149 Mc. according to the following schedule:

Time (EDST)	Antenna Heading	Text
0630 to 1700	NW (aurora)	A DE W1REZ
1830 to 1900	NW (aurora)	A DE W1REZ
2130 to 2145	SW	IGY TEST DE W1REZ
2200 to 2215	W	IGY TEST DE W1REZ
2300 to 2315	NW (aurora)	A DE W1REZ
2400 to 0015	SW	IGY TEST DE W1REZ

Ray will take a standby after each period, and monitor for 15 minutes in the direction of the transmission. The sked will be held closely during June and July. Take a listen for W1REZ's signal, and let us know whether you do or don't hear it during these times. That way, we can use your reports as confirmed negative data when the band isn't open.

THE LATEST PROPAGATION NEWS

144 Mc. during April 16 - 30

Another good period for auroral work! Your report forms show that the 17th and 18th were the best evenings, but aurora was also in evidence on the 15th, 19th, and 26th. We notice, however, that those late morning openings observed last month (around 0800 to 0900 EST) were completely absent during this period. Let's give the reports a quick rundown.

W1AHE in Stowe, Massachusetts, submitted reports for April 15, 17th, and 18th. On the 15th, he received signals from W2CXY, W1AZK, and W2BV from 1900 to 1925 when he reported the band fading out. W1AZK took it up at that point and heard W8KAY and W3LZD at 2020 when the band opened up again. W1HDQ tells us that in the very early morning hours of the 19th, the W8s were extremely loud, but no matter how carefully he listened, the W9s gave out not a single flutter.

The 18th was reported as "well above average" by W20RI. He heard W1s, 2s, 3s, 4s, 8s, 9s, and 0s with his antenna west of north early in the evening. Signals began to peak near north at 2100, and then come in stronger from the original direction about an hour later. On the 26th, W2AZL heard W9EGH, W20RI, W3WBM, and K2APS at 2000 and after, EST.

W4EUS, W4FJ, and W4UMF had quite a busy time on the 18th, too. Between the three of them, we have auroral coverage from 1745 until 2200. KN4JYQ reported the April 16th opening for us, and heard such stations as W2OPQ, W9EGH, and W3LZD.

It looks as if the spurt of activity during the last half of April was only by way of preparation for the dead quiet of the band during the early part of May. W2CBB, W2BLV and W9QKM caught a very brief auroral opening on May 8th about 2300 EST. But it was very brief! W8JUV wrote that he just missed an opening during early evening of the 15th. However, you can see that all those negative reports you sent in were indeed very valuable. They told us that the band was really dead and that lack of aurora was not caused by the lure of spring weather!

A Little Higher in Frequency

220 Mc. held its own very well during the last half of April. We have auroral reports on file now for the 17th and 18th of that month. On the 17th at about 1800 EST, W1AZK heard W3LZD; K2GRI worked W3LZD and W3ARW on the same evening about an hour later. W3ARW heard W1RFU and worked W8IJG and K2GRI on the 18th a little after 1900 EST. K2GRI was in the act again working W3LZD on this date.

The Six Meter Scene

It's quite obvious from your reports that 50 Mc. activity picked up a little during the month of April. We received a great many auroral reports which follow the pattern outlined in our 144 Mc. summary. An interesting observation from W1HDQ:

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He heard W2YYI and W1FOS via aurora while he was operating mobile using a halo antenna. This was on the 18th of April between 2230 and 2310 EST. He says that many other signals were heard, and that they were surprisingly strong at times.

Sporadic-E propagation was quite widespread during this period. W1RFU and W1SUZ both heard W4VOZ and W4GJO on the 19th around noontime. W4AYV worked K8BAW, W8NVI, and W8VSX on the same day around the same time. And W8OJN heard W4LAW, CO2XZ, CO2ZX, and W4GJO. The 22nd and 23rd were also good days for Sporadic-E as evidenced by the reports received from W3BGI and W3ZYK, W4CSS, W5VCX, W9FVJ, and W0YZZ. W6ABN heard numerous W7s, among them W7INX, W7CPX, and W7CLP, on the 28th of April from 0940 to 1100 PST. On the 29th, K6EPT was receiving signals from W7-land between 2100 and 2315 PDST.

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April 19th seemed to be the best day for F-layer skip. W4TDW worked LU5CK, LU9MA, and LU2DH. LU7DDG and LU4DFN were QSOed by W4ZBQ. LU7AT also heard W9HLY, K8BPY, and K5CJK on the 19th, and worked quite a few W4s on the 20th. — 209

Many reports were received of Transequatorial Scatter work. LU3EX, LU7AT, LU8AE, TG9JW, and CX1AQ sent in long lists of contacts and heard reports. We notice that TE contacts between Venezuela and Argentina were quite common during this period. We now have TE coverage from another part of the globe: JA2GR worked VK4NG (crossband 6/10) around 1750 to 1800 JA-time on the 16th, 17th, 18th, 19th, and 20th. On the 21st, JA4HM also worked VK4NG at 1850 (crossband 10/6).

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Activity held up well during the first half of May, although auroral contacts were completely absent.

F-layer contacts between Argentina and California were numerous on May 1st. 175
LU7AT reports hearing many W6s. W6AJT worked LU1DJC and LU9AT. W6DQJ, K6EPT, and K6GTG were also in on this excellent opening. KH6CCZ worked LU4HG and LU3EX at noon HST, May 4th. — 190

Sporadic-E openings were also frequent. The best dates appeared to be May 2nd, 8th and 15th, with brief openings at other times. W7DYD and W7BDU worked W6s on the 1st and 3rd respectively. CO2ZX contacted W8BQJ, K8DKE, W8SVU, and W9RCS on the 1st between 1035 and 1200 EST. K5HTH reports that the best opening from his location was on the 12th when he worked and heard many W6s, between 1956 and 2100 CST. Also on the 12th, W5EXZ worked K0GKR, W7ACD, and W7EPZ, and he faired very well during the May 15th opening.

That's how your reporting went for these two periods. Judging by all the sporadic-E the past few days, we'd better prepare for a regular deluge of second-half May observations. We'll have something to say about them next month, if we can dig ourselves out from under, that is!

DON'T FORGET OUR NEW CERTIFICATE!

As announced last month, we will soon be issuing handsome certificates to award those who have been reporting so faithfully. We expect to send out the first batch before the end of June, and next month's News will carry the calls of the deserving winners. Don't stop after you've got your certificate, though! There'll be room on it for a whole set of endorsement stickers which can be earned by further consistent reporting.

For any of you that missed the announcement, it bears repetition that the certificate (and stickers) are earned by submitting six or more half-month reports during any three-month period. These reports can be broken down in any way you like between bands, just so long as six of them are sent in during the three months.

Another rundown on what defines a "report" might also be in order. These "rules" are all very practical ones, designed to make sure we get as much usefulness as possible from each report. For one thing, reports must be submitted on PRP report forms, and the information called for on the tops of these forms must be filled in. Each report form must include at least one two-way contact report, heard report, or negative report complete with specific time and date. Lastly, be sure and use separate forms for each band and for each half-month period. You can combine them, of course, if you want to, but then we can only count the information as one report, instead of breaking it down by bands and periods.

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T.E. NEWS AND NOTES

From "Down Under"

The writer has often thought that, what with TE work being so consistent between South and Central America the past few months, something similar ought to happen in other parts of the world. A letter to VK4NG, Rockhampton, Queensland, Australia recently, brought back several reports and an interesting letter to the effect that TE certainly happens there!

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VK4NG has been picking up JA signals quite regularly since back on March 9th, when he heard JA4HM via F2 at about 1215 his time. First TE was an unidentified JA station caught at 1940 on March 12th. We note from VK4NG's log sheets that the JA signals come in from about 1000 until up to 1600 via F2 skip, and then between about 1800 until as late as 2130, presumably due to TE.

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These latter ones are described as follows: "The evening signals have been very regular in occurrence, build up quickly from strength 1 to 9 with a flutter which decreases as signal strength increases. They then hold steady (8 - 9) for a few minutes to an hour and then fade out with the same flutter. It appears that this condition is related to the sunset as signals were best when the sun had just set here and in JA."

VK4NG has made all his contacts crossband -- 28 to 50 Mc. This has made things quite difficult, since conditions on the two bands are often markedly different. So far, no 56 to 50 Mc. (Australia has 5 meters instead of 6) have been managed.

From TG9JW

In his most recent letter, pioneer TE observer Jack Whitehead, TG9JW, admits that this TE business has him quite puzzled. Jack has "always associated trans-equatorial scatter propagation with jelly-like signals. The "S" meter is all over the place; you would think that the other station was keying his transmitter in some haphazard fashion at the same time he was talking. This is the usual kind of signal from South America.

201 203 194 216

"However, on the days March 17th, 22nd, 26th, and 27th, the signals were rock steady, with a slow fade now and then of one or two "S" units on the tuning meter of the HQ-129-X. On March 26th, the signals from LU6DO, LU3DH, and LU7DDG were so strong and steady that the tuning meter was about 1/4 inch above S9, and would stay that way for a whole transmission. The beam could easily be rotated to maximum by watching the tuning meter. No signal on 10 meters when the band is very good could have been steadier."

This brings up a good point. The flutter (or lack of it) is one of the more interesting and unexplainable things about TE. Pay particular attention, whenever you work or hear such signals, to their fading characteristics. Write down what you hear, too, on the PRP report form! The same thing goes for signals on some intermediate paths. We get many reports of 1500 to 2000 mile contacts (OA, PY5 and PY6 to CE, IU, CX or XE, for example) right in the middle of a TE opening; also, many reports of sporadic-E-distance work are received. Are these connected with TE, or aren't they? The signal characteristics observed may help us figure this out, so please give us the information.

From Madeira

There aren't many locations where you can hear two continents via transequatorial scatter, but CT3 seems to be one of them! On the evening of February 19th, CT3AE heard VQ2PL in Northern Rhodesia. During the next few evenings he heard IU3EX, LU5CK, IU6DMN, CE3QG, IU7DDG and IU9MA. According to XE1GE, CT3AE is still sweating out his authority to work 50 Mc. I'll bet a lot of other observers are even more anxious than he!

Little Time Left

Judging from previous years, and from a general trend in our reports, the season for transequatorial scatter is just about up. This time, at least, there's enough interest in the subject to keep us informed as to just when (and if) TE gives up the ghost for another season. Don't forget -- Stanford University wants to obtain

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some recordings of TE signals (see last month's News for details). If you have or can make some, please get in touch with Prof. O. G. Villard, Jr., Radio Propagation Laboratory, Stanford University, Stanford, California. It would be best to do this before sending any recordings, because there is something of a problem in getting them into the country and through customs.

REPORTING SUGGESTIONS

W2IDZ came through, the other day, with a whole slew of comments regarding our PRP reporting schemes. We're still digesting some of them, but a couple bring up points which others may have been wondering about. The first is to with the use of an "F" in the Quality column to indicate a rapid, "aurora-type," flutter fade. Ed, logically enough, questions the necessity for reporting that an aurora signal has an aurora-type fade. About the only answer here is that we hate to take things like that for granted. After all, we have a report of north-peaking signals not having such a fade. Then too, the "F" is something of a help in showing when and if the signals begin to clear in tone near the end of an opening. In summation, the "F" has a purpose; we'd like to maintain and encourage its use. You don't need to mark it down for each contact either. Once at the top of a list of reports is enough to keep us happy.

Another comment of Ed's dealt with this business of meteor/ionospheric scatter. He felt that "MS" was not very descriptive of everything that we chose to have it include, and would like to have it broken down into the several varieties of scatter. Our answer here was, first of all, that since we are not collecting tropopsheric scatter reports, we don't need to worry about a "TS." In addition, we still feel that, in amateur scatter work anyway, it is pretty hard to tell just where the meteors leave off and other mechanisms take over. Whatever is involved, it is most likely in the ionosphere, so no one should mind the use of an "I" to show this propagation type. So, especially since we recently found that an "I" would fit in best on our PRP punch cards, an "I" it'll be!

NEWS AND NOTES

Aurora Auf Deutsch

We note in the March issue of "DL-QTC" that the first German Communications via auroral reflection were reported on January 21st between 2200 and 2400 middle European time. The first G station called by DL3YBA refused to respond. He thought it was a bootlegger since he had to turn his beam northward! Later, DL3YBA worked GW8UH, about 550 miles away. DL3SP heard G3HRA, G3CIW, G3ABA, and others. DL6MH worked PE1PL and three Fs. All this was on 145 Mc.

CQ Vermont And New Hampshire

Louie, W7ACD, of Shelly, Idaho, reports that his old 100 watt final is now operating at 500 watts as a result of building a new power supply. Naturally, this is doing him no harm on his scatter schedules. He would like very much to sked stations in Vermont and New Hampshire, those states being needed for 50 Mc. WAS. Any takers?

Worthwhile?

W9ARN wonders if his "small" amount of operating (one hour per day) is worthwhile. Sure is, John! I wish we had reports for one hour per day for every registered observer. Keep up the good work, and I suspect that you'll be getting a certificate in the mail one of these days.

Remember, the IGY itself begins July 1st. It's now more important than ever that we have plenty of PRP reports to put together with the information others are gathering. Please keep (or start) sending in those reports!

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

MPS/hwh

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

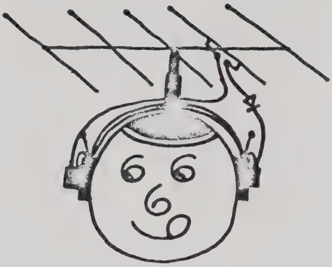
NUMBER 7 JULY, 1957

INTERNATIONAL GEOPHYSICAL YEAR BEGINS!

THE BRITISH IGY PROGRAM

MORE NEW COUNTRIES ON SIX ·

WHAT'S WHAT IN PROPAGATION



LOVE THAT 6 METER DX!!

(From K0CEC's 6-meter QSL Card)

REGULAR WORLD DAYS COMING UP!

July 4th	August 12th
26th	25th
27th	26th

Note: W1AW IGY Bulletin times listed last month were EDST!

BRITISH HAMS AND THE I.G.Y.

Lest anyone get the idea that our own PRP and earth satellite tracking are the only schemes for radio amateur participation in IGY, we'd like to tell you a bit about what our colleagues of the Radio Society of Great Britain plan for this 18-month period. The information comes to us from Geoff. Stone, G3FZL, who with G3EOH, is coordinating the R.S.G.B.-I.G.Y. efforts.

As Geoff. points out, their program is naturally somewhat different from PRP, especially as the Gs are not licensed for the 50 Mc. band, and are not permitted to use more than 150 watts. The R.S.G.B. project falls broadly into the following sections:

(I) 28 Mc. trans-auroral path propagation, i.e.: United Kingdom, Canada, and northern U.S.A. They hope to arrange schedules which are now being organized in Britain by G2HOF.

(II) 28/50 Mc. crossband work, mainly to

BELOW AND RIGHT: Jim Whittaker, GK9AS, his 70 watt, 5-meter rig, and Wewak, New Guinea QTH. Jim is on 56.15 Mc. every evening, beaming N, S, and NE. He listens between 50 and 60 Mc. after each call. Beginning soon, 30-minute transmissions will be made each night at 1900 AET (0900 GMT) aiming north one night, south the next, etc. Jim's results are nil to date. Let's give him some encouragement!

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assist PRP.

(III) Possible 70.3 Mc. trans-Atlantic crossband work to 50 Mc. if the M.U.F. becomes high enough.

(IV) Tropospheric propagation study on v.h.f. including listening for specified v.h.f. BC stations in the 88-95 Mc. band, and also in TV bands I and III. Also work on 70.3, 144, and 435 Mc. amateur bands. They wish to find out how an average amateur with no more aparatus than a wet and dry bulb thermometer, barometer, and v.h.f. receiving equipment can make at least short term predictions of band conditions.

(V) Auroral propagation on 28, 70.3, and 144 Mc.

In addition to the above, a beacon station is being set up near Orpington, Kent, using the call GB3IGY on a frequency of 145.50 Mc. The output from their 500 watt rig will be beamed north by an 18-db. gain array located some 500 feet above sea level. Provision will be made for northwest antenna headings if it seems that there is a possibility of trans-Atlantic work. The GB3IGY transmitter will operate every half hour throughout the 24 during Regular World Days and Special World Intervals. For the remaining days, the station will operate from 5 p.m. until midnight.

Sounds like quite a program, we think you'll agree. With so many amateurs around the world working under PRP, the R.S.G.B. and E.D.R. projects, and other ventures; and all swapping ideas, data, and results, how can we miss making a really fine scientific contribution?

SOME GOT FIVE AND SOME GOT SIX

We hear from A. Pengelly, ZL2ACB, that he is now helping us push PRP in New Zealand. We should soon be gaining some new observers from "down under." Pen also points up a serious problem besetting world-wide v.h.f. DX with the following: "Unfortunately, here in New Zealand we are working under difficulties as far as our v.h.f. bands are concerned. Since February, 1957 our old 6-meter band has been changed to 5 meters -- 56-60 Mc., and it seems that most of the old 6-meter boys have gone over to five with both receiver and transmitter, so that they cannot listen on six. This band seems to be the only v.h.f. band on which oversea contacts can be made from New Zealand, and as we don't listen on six, and oversea hams don't listen on five, you can see or understand why you have not received more response from this area."

How about doing something about this situation, fellows? If you have six meters, see what can be done to permit listening on five, and vice-versa. It may just mean tuning your i.f. receiver to a new frequency range. Checking this out now might mean a new continent some time in the future!

Incidentally, while we're on the subject, all that has been said above applies to the 70.3 Mc. British authorization. The Gs have always been wonderful about providing us with crossband 6/10 and 6/5 meter contacts. How about us reciprocating? That North Atlantic MUF might get up to 70.3 Mc. next winter. Let's see some suitable converters built up this side of the "pond."

MORE 50 MC. POSSIBILITIES ABROAD

Poland

Looks like SP2DX (see last month's *News*) may have some company on 50 Mc. We've received a very interesting letter from Gen, SP5BR, who is a student at Warsaw Polytechnic Institute, stating that he is just now expecting his six-meter license. This will be good only for c.w. operation between 50 and 52 Mc., crystal controlled. Allowable power output will be 200 watts.

Gen plans to put on about 80-100 watts and a three-element beam. He may even have TVI! There's a channel 3 (56-62 Mc.) station about eight or ten miles away. Because of his interest in v.h.f. techniques, I'm sure that Gen would be very glad to hear from any PRP observers who care to write him as follows: Eugeniusz Raczek, Zielonka k/Warszawy, ul. Kopernika 7/4, Polska-POLAND.

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Norway and France?

The following is from the April, 1957 issue of Radio ZS (in PRP observer ZS2Y's column "On the Very Highs"): "A card from LA7Y, Oslo, gives the good news that he has been given permission to operate on the 50 Mc. band during the IGY. Another station reported to have been given a 50 Mc. permit is F8ACT, but we have no confirmation of this." Anybody have any info on these stations?

Sweden

Here's some more dope on six-meter doings in SM-land. It's from Karl-Erik Nord, SM5MN, who is the VHF Manager of SSA. "I guess that not more than 10 to 20 SMs will be operating on 50 Mc. during the IGY. Just now I know that SM5FJ, SM5VL, and myself will be active on 50.04 Mc. with 100 watts to 829Bs, crystal controlled converters, and three-element beams. SM3WB will be on with similar equipment, but his frequency is not known here at this moment."

DIGGING OUT FROM UNDER

In May....

Well, that Sporadic-E season we have all been anxiously awaiting finally arrived with a flourish. Hardly a single day went by without some skip, and there was plenty of double-hop, too. It would take 25 bulletin pages and from now 'til doomsday to give you a complete rundown on all the happenings during the last half of May, so we're going to contain ourselves and stick to some generalities.

W4LWY was on the air on May 22nd from 1558 to 0032 EST, "at which time transmitter blew a 'gasket' (overheated and overworked) and W4LWY was QRT till June 2nd." K8CIC writes us that on May 30th he heard Florida, Louisiana, Mississippi, and Texas all day, even on his mobile setup, and that he copied all stations FB. "Heard more stations on 6 than ever before," writes W3FPH. He was hearing signals from W1, 2, 3, 4, 5, 7, 8, 9, 0, VE1, Cuba and Puerto Rico, on the 21st and 22nd of May.

W7INX tells us that he heard the first Montana signals in three years of operating on 50 Mc. On May 18th he heard W7EPZ and worked W7JRG about 1400 PST. W7INX now has 35 states worked on 6 meters.

W6BAZ was operating on the 17th of May from 0956 to 1156 MST and noticed a lot of single and double-hop. Most understandably he remarks, "Wow - sure would like to have a day like this during a VHF contest!!"

We notice that our observers stopped operating in the wee hours of the morn because of fatigue and not because the band went dead. Down at the bottom of his report form, W5FXN placed a plea for "more sleep, power, antenna and states!" He tells us that the skip during May 20th to 23rd was shorter than any he has seen since 1950.

We think that W4ZZ's note is worth passing along to you: "I'll bet your Report Digester gets indigestion over these two weeks of Es.... I hope that my XYL doesn't take such a time to be away again, as much precious time was lost in having to get my own meals, especially dinner during the big rush hours around 6:00 PM EST. Fortunately, she had left me a few pre-fab frozen TV-type dinners that only had to be heated, and that saved some time."

There was quite a bit of Sporadic-E in Japan, JA2KB was busy on the 3rd, 4th and 5th working JA2GR, JA3EA, JA6BI and JA6IF, among others. In the absence of TE activity, TG9JW switched from TE reporting to Sporadic-E observations with no effort at all. On the 18th of May he worked some W4s about 1700 CST. CX1AQ sums up the South American situation with his note, "the band was absolutely dead. . . no amateur nor commercial signals of any foreign country were detected."

There were two very brief auroral openings on 144 Mc. on the 25th and 30th. W1AZK, W1REZ, W2ORI, K4EUS, W8EHW, and W0HXY reported hearing and working a few

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stations during these two evenings. George, W1MMN, writes that he monitored 144 Mc. quite faithfully during May but without result. Says he, "If you wonder what I do when listening - I mold bullets and reload my shells. Otherwise I'd go nuts."

....and June

Working our way into the month of June we see that there were very few auroral contacts. What little aurora there was occurred on June 4th and 5th from 1700 to 1900 EST. K2HOD, W2ORI, W8BAX, W8EHW, W8JUV, W8KAY, W9EGH, W9KLR, and W0HXY all were active on 2 meters during these two openings.

There were a few auroral contacts made on 50 Mc., but most of the activity consisted of single and double-hop Sporadic-E. A day without an opening was a rare June day, indeed.

K2ITP worked W7ILL and W7SP on June 10th at 2100 EST for a good example of double-hop. About the same time, K2ITQ heard W7JRG and W6PBC and worked both W7ILL and W7SP, too. Bob, W3AMO, reported the June 10th band opening as "...one of the best EE yet heard."

"Excellent conditions this half of the month. Openings every day - skip changes around from E or NE to W several times per day," wrote W5CVW. On June 9th about 2300 CST, he worked K6KCG, K6GWX, W6NLZ, and W6BWG and called it "A quick opening with tremendous sigs - then a quick fadeout."

W6GQZ was active during morning and early evening openings on the 11th. About 1000 PST, Iva heard W7DTB, K0GKR, W7ACD, and W8PEG; at 1800 that evening W5SFW, W7VDZ, and W7JRG were coming through.

W4MS and K4AGM sent in a long report of stations worked and heard. It looks as if they have already earned that certificate and are well on the way to winning a sticker for it.

CO2ZX got in a lot of Sporadic-E contacts on the 3rd of June, working K9AEK/4, K4LZO, and W3EBJ. On the 14th he QSOed W4AYV, W5VV, K5GWD, and W5FDB.

One more point of interest: VE3AET reports hearing CT1C, Portugal, on the 8th between 1418 and 1425 EST.

So... the Sporadic-E season has finally arrived. We'll do our best to keep up with you, so don't be afraid of overworking us. Keep those reports coming in!

WAVE PROPAGATION 101

There's one accomplishment, at least, which PRP observing can already claim for itself. We refer to its helping to foster a certain "propagation-mindedness" among many of those taking part. This is surely a good thing, for, as W1HDQ has pointed out many times, it's the vagaries of signals in getting from one spot to another that account for just about 99.44 percent of v.h.f.'s fascination.

"Propagation-mindedness" has been showing up in many ways. One is our mailbag's daily quota of letters and notes. Another is that column marked "PROP" on the reporting forms. Fellows who used to leave this space blank, and even those who once wrote in: "What the dickens is all this propagation business, anyway?" are now having a go at telling us why what happened did. Sometimes they're right, and sometimes not, but it's a good sign.

We wish very much that there was room, here in the News, to print the details (or as many of them as are known) about the various modes. This might help clear up such misconceptions as the one that all contacts made across the equator are the result of TE. F2 and sporadic-E skips sometimes get confused, too. Then too, there's the mixup between tropospheric and sporadic-E on the shorter paths, and the whole business of scatter propagation.

Since there isn't space (and because we don't want the News to be too text-bookish) we're going to compromise by printing below a list of articles on propagation which have been published in the amateur journals since 1950. No claim for completeness is made, but we think we've found most of 'em. A

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bibliography of this sort really isn't such a bad idea, for it points up a lot of valuable and interesting material which may otherwise escape notice.

Here's how it works: The references have been arranged according to subject matter. Just run down to the thing you're curious about, and there is the available material. If you're starting from scratch, read the articles in about the order listed. A reminder for those without backissue files -- QST can be found in most libraries. After completing this course, you should qualify as a propagation expert in just about any get-together!

General Ionospheric Propagation

McCoy, "Let's Meet Mr. Ionosphere," QST, August, 1954, p.36.
Jacobs, "The Sunspot Story: Cycle 19," CQ, Part 1: March, 1956, p.29; Part 2: June, 1956, p. 24.

General V.H.F. Propagation

Tilton, "V.H.F.: Why--How--When?, Part 2," QST, February, 1951, p.47.
Tilton, "Six Meters for the Beginner, Part 1--The Nature of the Band," QST, May, 1955, p. 22.

F2 Skip

Tilton, "World Above 50 Mc.," QST, November, 1956, p.71.

Sporadic-E (on 144 Mc.)

Tilton, "The World Above 50 Mc.," QST, September, 1955, p.59.

Aurora

Moore, "Aurora and Magnetic Storms," QST, June, 1951, p. 14.
Dyce, "More About V.H.F. Auroral Propagation," QST, Jan., 1955, p. 11.

Ionospheric Scatter

Tilton, "The World Above 50 Mc.," QST, Jan., 1957, p. 53.
Villard and Peterson, "Meteor Scatter," QST, April, 1953, p. 11.
Tilton, "The World Above 50 Mc.," QST, October, 1954, p. 61.
Tilton, "The World Above 50 Mc.," QST, July, 1956, p. 59.
Moynahan, "V.H.F. Scatter Propagation and Amateur Radio," QST, 1956, p.43.
Tilton, "The World Above 50 Mc.," QST, Jan., 1956, p.63.
Tilton, "Meteor Shower Calendar for V.H.F. Men," QST, Feb., 1957, p. 44.
Bain, "V.H.F. Meteor Scatter Propagation," QST, April, 1957, p.20.

Back-Scatter

Tilton,"The World Above 50 Mc.," QST,Jan., 1957, p.53.

Transequatorial Scatter

Tilton, "The World Above 50 Mc.," QST, Feb., 1956, p. 53.

Tropospheric Propagation

Collier, "Upper-Air Conditions for Two-Meter DX," QST, Sept., 1955, p. 16.

BEACON, BEACON, WHO'S GOT THE BEACON?

W5KU Now W5KES

Ed Nuttall and his group at the United Gas Corporation, Shreveport, Lousiana, report that it won't be very long before their 50.55 Mc., A1 emission beacon will be on the air from 8 a.m. to 5 p.m. Monday through Friday, holidays excepted. In addition, they're dickering with the FCC for permission to operate on a continuous, automatic basis. We'll have more on this as soon as it comes through from Shreveport.

W6LHV, San Mateo, California

We understand from W6GCG that a 50.25 Mc. beacon is now in operation at W6LHV, San Mateo. A2 emission at 25 w.p.m is used, and the transmitting hours are from 0000 to 0600 Pacific Daylight Time. Power output is 10 watts, and the antenna is a vertical dipole.

VE3AGU, Ottawa, Ontario, Canada

Noted on one of Jerry's recent PRP logs was the fact that he has a beacon station going, too. We have no specific information other than the frequency, which is 50.1 Mc.

SOMETHING NEW FOR MS

Received a thought-provoking letter the other day from Ev Taylor, W8NAF, of Dayton, Ohio. Ev thinks our present method of communication via the meteors

is rather crude, and puts forward a new scheme. Here's part of his letter:

"If you live within 500 miles or so of Washington, D. C., have you noticed "pings" on the signal of WWV? Try it some night; you will hear them. You might even hear them within 200 miles or even 1000 miles of WWV. I do not know, as I cannot be everywhere at once. Once again - try it. Generally there are more "pings" on the station around 2 or 3 a.m. During this period of the sunspot cycle, the "pings" are more in evidence on 15 Mc. Perhaps in 5 or 6 years 10 Mc. will be the best frequency.

"Now for the idea! You will need an additional receiver which will be tuned to WWV. A squelch circuit will have to be built into the receiver which will be adjusted to close with the "pings" of the meteors on the signal of WWV. The output of the receiver will be fed into a gadget such as appeared in CQ magazine, March, 1957, entitled the "Contest Keyer." The output of the keyer will be used to start and stop the motor of a tape recorder. The output of the recorder will feed into another keyer which will key your present transmitter. Your keyed message will be put on the tape with the aid of a "bug" and audio oscillator.

"This same system could be used with the aid of the other station being worked, if the latter would leave his transmitter on. When the path was open due to meteor bursts, his signal would key your transmitter for the duration of the burst. Shielding problems here would be rather complex, however, and it would necessitate separate antennas for transmitting and listening. Perhaps the shielding problem could be licked by working crossband between 220 and 144 Mc., etc."

Well, what do you think about it? A somewhat similar scheme was employed in "Project Janet" up in Canada, where information about midpoint conditions was used to control transmissions from the terminals of a scatter circuit. Aside from the problems which Ev points out, we wonder whether the meteors coming in over the midpoint of the Your Location-Washington path would be any sort of instantaneous guide to conditions over the path you're trying to work. If you have any thoughts or suggestions on this, why not let Ev know? His address is 1125 Highridge Avenue, Dayton, Ohio.

IGY, WWA BULLETINS, SUMMER REPORTING

0000, GMT, on July 1st, 1957, marked not only the arrival of the IGY, itself, but also the six-month anniversary of PRP. Actually, we're even older if you count our trial balloons sent up last November and December. Since that time, a great many reports have been collected, worked over, and evaluated. Even now we're beginning to prepare the PRP punch cards which will make our data easily and efficiently available to the scientific world throughout the coming years.

Even though the IGY idea is old hat to us by now, its actual kickoff, as proclaimed in the newspapers and periodicals, should be a source of inspiration to all of us. Of even more practical benefit, is the commencement of the IGY World Warning Agency bulletins. Recall that these deal with periods called Alerts and Special World Intervals during which something unusual, geophysically speaking, is expected to occur. These periods may or may not portend exceptional conditions on the v.h.f. bands, but it is important that we try our best to be active during them.

There are two ways to find out about the Alerts and SWIs. Both were described in last month's News. One is to listen to WWV at 4 1/2 or 34 1/2 minutes past the hour. Last month we told you how to interpret what you hear. The code is also printed on page 25 of QST for July. The other way is to make use of a new service offered by the ARRL Headquarters Station, W1AW. During its Official Bulletin periods, W1AW is now announcing the WWA Alert and SWI Pronouncements. Sunday through Friday, the times are 2000 for c.w., 2100 for phone. Note that these are EDST, and not EST as stated last month. Monday through Saturday, there are additional bulletins at 2330 (c.w.) and 2400 (phone). Make use of this service. Let us know about it, too!

Summertime brings with it two minor PRP reporting problems. One is daylight saving time. Be sure to indicate in the proper space whether your station (and reports) are on daylight time or not. We don't care which you use, but we do want to know which! Our other difficulty is the result of increased mobile and portable activity. Whenever you work or hear a station who is signing portable or mobile, please put down this fact, along with his QTH. This is quite important, since we have no way of knowing he wasn't home if he doesn't turn in a log or isn't worked by another PRPer. Looks like that's it for this month. Hope you're all having a swell summer.

With 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

MPS/hwh

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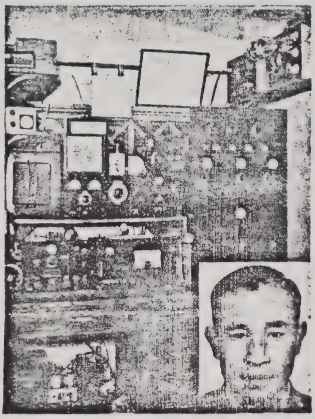
THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

NUMBER 8 AUGUST, 1957

BIG BIG BEACON BEGINS BEAMING BROADCASTS
FIRST PRP AWARDS GO OUT TO STAR REPORTERS
PROJECT SOOP TO COME A'CALLING THIS MONTH
PLUS, AS USUAL, ALL THE LATEST GOSSIP



ABOVE: Observer JA1ATF and his very neat Tokyo, Japan station. The 4E27 50 Mc. transmitter feeds 120 watts to a 4-element yagi antenna.

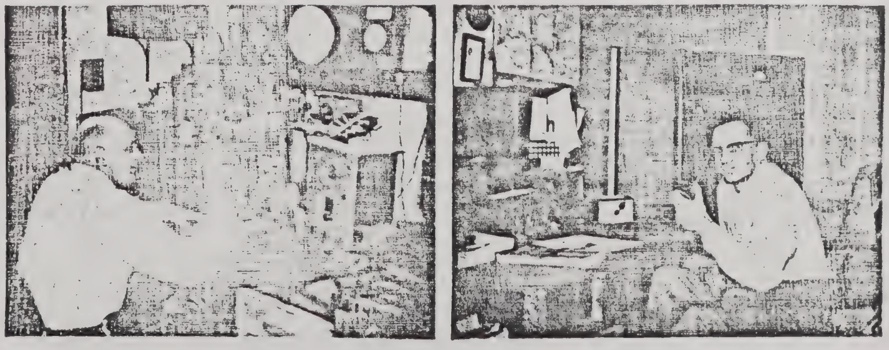
TEXAS-STYLE BEACON

If all goes well between the time this is being written and the time you read it, a new super signal will have already appeared upon the 50 Mc. scene. We say super advisedly for the rig that puts this one out makes the "Collins Colossus" setup seem suitable for the Novice licensee.

All this was recently called to our attention by Allen, W4RMU, of Oceanway, Florida. He came across it in connection with his work for the Jacksonville Air Route Traffic Control Center. Allen reported that certain soon-to-begin IGY experiments were to utilize transmissions from a very powerful transmitter located at El Campo, Texas (about 70 miles southwest of Houston). The purpose of these tests is to study the possibility of achieving reliable air-to-ground, ground-to-air communications by means of tropospheric and ionospheric scatter.

It seems that all transmissions are to

Whilst stopping over in Buffalo for a club talk last April, W1VLH was treated to a splendid tour of the local v.h.f. highspots by observers John, W2LXE, and SCM Chuck, K2HUK. The color slides from which the pix below were made were one result. LEFT: That aurora wizard from Lockport, New York, W2ORI, shown with PRP report form in hand. John runs 800 144-Mc. watts to pp. 826s, his antenna being four eight-element yagis arranged in a one-wavelength box. RIGHT: Another John, this time K2HRB, who manages to keep Lancaster, New York on the 50 Mc. map with his 60 watts output and four-element array.



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be beamed at Round Hill, Massachusetts. A specially instrumented B-50 will fly a course extending from El Campo on great circle path of 062 degrees, passing over Cherry Point, North Carolina, to a point approximately 600 statute miles over the Atlantic Ocean, then returning to Bedford, Massachusetts by the most direct route. Each mission must be flown at constant altitude, so that meaningful signal strength patterns can be determined. Missions are planned at odd thousands of feet altitude from 5000 feet to 31,000 feet.

Our quest for further information led us to the telephone of Mr. Edward J. Martin of the Air Force Cambridge Research Center. Here we learned that the transmitter to be used will, indeed, be a whopper, running 600,000 watts c.w. power. Where but Texas! All this soup will feed an 14 db. gain antenna (46 degree half-power beamwidth) aimed along a bearing of 052 degrees true. Frequency will be 49.28 Mc.

'What about the operating schedule?" we asked. This, it seems, is not an easy question to answer in any operation involving aircraft. As of now, though, one to two dozen flights are scheduled on a weekly basis starting Thursday, July 25th. They will begin about 5 or 6 am. Texas-time, and transmissions will continue until noon or early afternoon. C.w. emission will be used, the only station identification being 10 or 15 second breaks about every five minutes.

So...if you can be around on Thursday mornings, take a listen for this Lone Star monster! Chances are, it ought to "scatter" a pretty good signal all over the eastern half of the country. And if we get a Thursday morning sporadic-E opening you'd better be careful about turning your receiver much below 50 Mc.---it might get burnt out! Needless to say, we'd like reports on reception of this station for PRP (and for the Air Force). Just log 'em in the usual way.

Incidentally, the same setup is to be used for other tests on slightly lower frequencies. This project is for the Signal Corp under M.I.T.'s Mr. William Abel. Frequencies used for this work will be 40.35, 38.25, 36.25, 34.15, 32.15, and 29.9 with emphasis on 38.25, 34.15, and 29.9. Their schedule calls for operation on Mondays and Tuesdays beginning shortly after the first of August.

NORWAY GETS SIX

Halvard Torgersen, LA2AD, reports that Norwegian amateurs have obtained permission to operate on 50-54 Mc. during the daytime, i.e. until 1900 GMT. This will be good until July 1, 1958. Halvard, himself, expects to have rig going about the middle of August. LATE NOTE from LA6QB, Secretary of the Norwegian Radio Relay League: The 50 Mc. assignment will be OK for A1, A2, A3, and F3 emission. Same goes for assignments at 70.6 and 72.0 Mc. For these last two, frequency tolerance must be better than 0.003 per cent. LA stations are allowed to transmit only from 0500 GMT until 1900 GMT.

BACK-SCATTER AT MIDNIGHT???

A couple of months ago, while evaluating some spring 50 Mc. reports from our overseas observers, we came across something strange which had escaped our earlier notice. Here were reports of amateurs in Japan's 2nd call area hearing and working other Japanese stations a few hundred miles to the east and west with their beams aimed south to southwest. Nothing so strange about that, you may be saying...must have been F2 layer back-scatter; had lots of it around the U.S. last winter.

That's what we thought too, that is until we looked at the time column. All this was going on around midnight! Furthermore, it seemed to have happened just about every night from the middle of March 'till the middle of April. Now we all know that midnight is no time for any self-respecting F2 layer to be up and bouncing back 50 Mc. signals. On the other hand...what was going on?

Seeking more information about this nocturnal nonsense, we wrote to the fellows who had reported it -- Fumio, JA2GR; and brothers Iwao and Osamu, JA2KB and JA2ID. All have since been heard from, and have confirmed in full their earlier reports. JA2GR writes: 'When I contacted with JA4HM, JA3PF, etc., station, I heard very very fast QSB. And I contacted them almost every night from March to May in this year (at 2200 - 2400 JST). Especially I could contact with them very often in the middle of March to in the middle of April."

JA2ID had this to say: "About your letter on May 28, namely this work over several hundred miles paths at times between 2200 and 0030 JST with antenna heading from south

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to southwest, my brother, JA2KB, wrote me following, for he is in Tokyo to attend at his school. He said his memory had been fainter fainter, but the condition of this kind of the works is always of the same. You gave the examples on March 23, his hearing JA2RX,---, JA4IT,---about which he said: That night at about 2200 JST he directed antenna towards south and heard two or three stations having their conversation who seemed to be JA2 and JA3 and whose signals he cannot hear by ground wave. Their signals were very weak, q 4-2, with slow or fast, fluttering fade present.

"And then at 2250 JST JA2RX found JA2KB calling CQ DX and they contacted with. Gradually the condition became good and grew to JA4 and he could contact with JA4IT. Their signals were felt very round and bouncing and was expecially cut their high sound in the same way of this kind of scatters. He thinks that this kind of scatters was at any rate related to evening hour transequatorial scatter propagation toward south i.e. VK, but South America because JA1ALZ has SWL card from VK, and that so, if the channel of VK was of the same as that of JA, we might be able to contact with each other.

"Then next I, JA2ID, think following: This kind of propagation always to appear before or after days or hours of transequatorial scatter propagation. How would you think that you examine the data of back-scatter of the near days when TE scatter was?"

That's just what we want to do, Osamu, just as soon as we have a chance. It was the apparent closeness of this "backscatter" to TE that made us so interested in the first place. We're very grateful to you fellows for being the first ones to make contact in this manner, and for your reporting it to us. Over on this side of the world, TG9JW in Guatemala, and XE1GE in Mexico City have heard each other very weakly with beams aimed south during TE openings. No QSO was ever made, however. Down below the magnetic equator, there are often many strange goings on in the antenna heading department during TE affairs. What if any connection there is remains to be seen. Let's hope that further analysis of the data on hand, plus that to be gathered during the coming year, will point the way.

YOUR REPORTS SHOW...

by Constance Campbell, W1CIE

The IGY got off to a good start on July 1st with a tremendous spurt of activity. Reports have been coming in in great quantities and we've just finished checking through them to try to get an overall picture of what happened. Here we go for a quick summary of what-was-what.

144 And Up

We don't want to belie our first paragraph but will have to admit that 2 meter enthusiasts didn't get too much of a workout during the last half of June and first half of July. However, there was some aurora activity, and quite a bit of it, during the evenings of June 30th, July 4th, and very early in the morning on July 5th.

On June 30th, W2BLV checked WWV and heard evidence of aurora but a check of 144 Mc. showed nothing. "Will stick around later tonite, perhaps it will come back," he said, and he was right. From 2256 and 2320 EST, he heard the auroral signals of W1AJR, W3RUE, W9EGH, and W4VVE. About the same time, W4VVE heard W4IKZ by means of auroral propagation. W4IKZ was 12 miles away and his auroral signal blotted out the direct one.

Also on the 30th of June, W8KAY reports that he heard 19 states via aurora! W9KIR sent in a long report and told us, "Many, many more stations not logged." At 2230 CST he notated, "Aurora still going strong...and very visible to E, N, and W and to overhead." W0SMJ started to hear auroral signals as early as 12 noon CST on the 30th.

The aurora of the 4th of July probably gave traditional fireworks displays a run for their money. W1REZ and W8DFW were among our many active observers on that evening. W0HXY also made an auroral contact with W0IFS on July 1st and again on July 3rd at 1950 CST. He was just getting ready to roll on the 3rd when the "QRM of two grandsons interferred with the program."

REGULAR WORLD DAY CALENDAR

August	September
12th	1st
25th	23rd
26th	24th
	30th

Please make every effort to be active on these days!

Also..check WWV or W1AW for latest ALERT and SWI info!

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W2CBB wrote us, "Got home just after midnight on the 4th of July holiday and was happy to hear a few aurora sigs coming thru. Please note that the beam was due west. Some of the signals were so strong that they didn't begin to go out until the antenna was rotated almost due south!..W9 stations were conspicuous by their absence, even tho beam was due west."

Although you must have already either read or heard the following information, we thought we'd mention it here because it is so very noteworthy. On July 8th, W6NLZ and KH6UK set a new DX record of about 2540 miles with their 2-meter contact. The QSO took place between 2211 and 2227 PST. Quite a haul! An interesting point is that a check of report forms shows that Sporadic-E skip was absent from the 6 meter band at this time, so some sort of tropospheric super inversion was probably the cause.

220 Mc. men experienced auroral propagation on June 30th, too. From 1425 to 1445 EST, W1RFU heard W8DX and worked W3LZD. W8DX, W3LZD, W8LPD, and VE3BQN also submitted reports for this 220 Mc. opening.

The Six-Meter Scene

The 50 Mc. band was really jumping during these two periods with plenty of single and double-hop Sporadic-E and lots of Aurora, too. Perhaps the most interesting day was June 30th. W1SUZ, Colebrook, Conn., was on the air from 1252 until 2340 EST and found many different types of propagation. He writes, "Terrific aurora. Very strong sigs from all locations noted. E layer sigs and aurora sigs coming in at same time during early hours."

W1HDQ had some comments about the band from 2120 EST on until later in the evening of June 30th. "Feature of this period...was appearance of several North Dakota stations. This rarity triggered off a North Dakota hunt that would have done credit to lower frequencies." K2PCG also wrote us concerning the 30th: "Conditions all day seem funny... W4s in the morning, aurora in the afternoon and both E and A at night."

'Way down in Oceanway, Florida, W4RMU was hearing many aurora signals on the 30th from 1730 until 1930 EST. He worked W4UVP and W4NWB in Tennessee and South Carolina respectively, via aurora with his antenna straight north. His location is quite a bit south for this type of propagation!

However, June 30th wasn't the only day of interest during this period. K5ABW and W5FXN found the 18th quite profitable. From 1830 until 2005 CST they were hearing such stations as W3FML, K8BAW, K4JJA, W8CMS, and K2ITP. W6ABN worked and heard a great many W7s during mid-morning of the 23rd.

W9FVJ in Toledo, Illinois, heard and worked Florida on the 16th, Texas on the 19th, California, Colorado and Wyoming on the 20th, Washington on the 21st, New England states on the 25th, and so on!

W0YZZ came across some very short skip on the 21st about 2100 CST. He worked W9s who were only about 420 to 500 miles distant and received signals from numerous W3s and W8s at the same time.

Looking now at the month of July, we see that the Sporadic-E season is still holding its own. Everyone seemed to agree that July 14th was the best day for skip. W5EXZ writes that it was "the best opening of this year with strongest signals." W4IWY informs us that Bob, W4UCH, heard 45 states in one 24 hour period on this day!

There were also many double-hop contacts on the 14th. K6HHA heard W4HXZ and K4AGM, and worked K4HQS around 1600 PST. But examples of EE were quite widespread date-wise. W6PUZ worked CO2XZ on the 3rd at 1135 PST and K4KYS in Louisville, Kentucky, heard HEKB, Quito, Equador, at 2115 EST on the 2nd.

We also know that it was a good period for single hop from the report sent in by VE3AET, who heard signals from Florida, Tennessee, Wisconsin, Oklahoma, Texas, Arkansas.

That winds it up for the period ending July 15th. As you can imagine, we are still "digging out from under"!

FIRST PRP AWARDS GO OUT!

We're very happy this month to report that the first shipment of award certificates is on its way to 152 of our most faithful PRP observers. These fellows are listed below,

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and we're greatly indebted to them for the many hours of work which earned them a spot on our first "honor role".

The certificates they'll be receiving are done in a handsome green and buff design, with the words "Consistant Reporting Award" occupying a central space. Room is provided for endorsement "IGY" stickers testifying to additional reporting. These are now in the engraving stage, and we think you'll like their looks very much. Incidentally, of the 152 stations listed below, nearly 70 have already qualified for their first sticker. But...without further talk on our part...here are the winners:

W1AZK
W1FVV
W1HDQ
W1HUN
W1JSM
W1LUW
W1MMN
W1PHR
W1RFU
W1SUZ
W1UHE
W2AZL
W2BLV
W2CBB
W2CXY
K2DIG
W2EJO
K2GCU
W2IDZ
K2ITP
K2ITQ
W2JJC
W2JXC
W2LWI
W2LXE
K2MEI
W2MEU
W2NLY
W2ORI
K2PCG
W2WZR
W2YIK
W3AMO
W3ARW/
W3MRQ
W3GKP
W3OJU
W3OTC
W3TDF
W3ZRR
W4AYV
W4EUS
W4FLW
W4FNR
W4HHK
W4HJQ
K4IJG
W4IKK
W4LLD
W4MS/
W4RE
W4NEW
W4RL
W4TDW
W4TDZ
W4UMF
W4YGK
W4ZBQ
W4ZZ
K5BDD
K5CHC
W5EXZ
K5HQZ
W5KWP
W5SFW
W5SNX
W5UMH
W5VCX
W5VV
W6ABN
W6AFC
W6AJF
W6BAZ
W6BJI
W6BWG
K6EPT
K6GGT
W6GQZ
K6GTG
W6KUH
K6PBW
K6RNQ
W6VDG
W7BDU
W7CJN
W7DYD
W7ILL
W7INX
W7QDJ
W7RGS
W7ZOW/
W7ZPS
W8BAX
K8BTV
K8BYP
K8CIC
W8CMS
W8CSA
K8DKE
K8DKO
W8DFW
W8DX
W8EHW
W8GHX
W8JUV
W8LPD
W8NQD
W8OJN
W8PLQ
W8PT
W8RFW
W8TCO
W8URO
W9ALU
W9ARN
W9DSP
W9DXT
K9EFU
W9EGH
W9FVJ
W9KLR
W9MFH
W9MHP
W9QKM
W9YIL
W0CNM
K0EMQ
W0FKY
W0IBL
W0IC
W0MOX
W0QDH
W0TII
W0WKG
W0YZZ
SWL21
CO2ZX
CX1AQ
JA2GR
KH6CCZ
LU3EX
LU5CK
LU7AT
LU8AE
LU9MA
OA4C
TG9JW
VE2AOM
VE2FF
VE3AET
VE3AGU
VE3BZV
VK4NG
VQ2PL
XE1GE

Now a word to the fellows whose calls aren't listed above. If you've been reporting regularly, but joined up a little late or were forced to miss a period or two -- don't get discouraged! Just keep up the good work, and we'll be adding your name to the list just as soon as we possibly can. If, on the other hand, you haven't been reporting much at all -- now's the time to start!

Full rules for certificate qualification appeared in the News for May and June. The only thing we have to add to them at this point is that we will be regretfully unable to give credit for reports received more than three months following the reporting period covered.

220 AND 432 BOOMING ACROSS THE MIDWEST

1.4 Meters

Nothing wrong with the 220 Mc. scene lately, according to W8WRN, Columbus, Ohio. Ken writes that there's "lots of 220 activity in central Ohio now. The gang gets on around 9 and you can always get a QSO. W8CSW, W8NVI, W8HOF, W8BAX, W8BPJ, and myself are pretty regular. W8MSA, W8USF, and W8UHZ are also on some. W8NVI was at W8IJG's during the opening (June 30's aurora), and said they were hearing 220 aurora sigs from W3, W8, W9, and VE land in good shape." How 'bout that?

Les, VE3AIB, Toronto, Ontario, writes that he has been busy getting set up for 220 Mc. (in addition to the regular 50 and 144). Said Les on June 1st: "I am now ready for the next good aurora (he was, too) running approximately 50 watts to a 6252 on 220.11 Mc., phone or c.w. Antenna is a 5/5 about 40 feet up. Converter has pair of 417As in a grounded grid circuit. Best DX heard (normal conditions) is W3ARW quite regularly on his skeds."

.7 Meters

Mike, W8HRC, writes in with a quite complete picture of the 432 Mc. situation in and around Detroit. He lists eight stations (plus his own) which are more than a little active on our lowest u.h.f. Here they are, with a rundown on their power and antennas

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(all have crystal-controlled converters for receiving):

W8JLQ, Toledo, Ohio, 10 watts output, 96-element array; W8RQI, Toledo, Ohio, 10 watts output, 48-element array; W8DX, Detroit, Michigan, 50 watts input, 45-element array; K8AIY, Detroit, Michigan, 2 watts output, 12-element array; W8HCC, Sandusky, Ohio, 6 watts output, 16-element array; W8UB, Port Clinton, Ohio, power unknown, 24-element array; W8UCT, Inkster, Michigan, 2 watts output, 6-element array; W8ARR, Detroit, Michigan, 6 watts output, 6-element array.

W8HRC, himself, runs 50 watts input to a 2C39 final, and gets about 15 watts out. This feeds a 20-element beam. Receiver is a 417A, crystal-controlled job. W8HRC has a nightly schedule on 432 with W8JLQ. The time is 9 pm. EST. Listners and joiners invited.

BEACON BUSINESS

Yellowknife On The Air

Several observers have reported hearing what appears to be the 49.99 Mc. signal from Yellowknife, N.W.T. (see PRP News for June). VE3AGU heard it on June 18th between 2125 and 2214 EST. Signal strengths ranged from 3 to 6, and best results were had with a vertical receiving antenna! Jerry reports that six was open to the south that night, W4AYZ and K4JGO being heard.

WWI At Last!

Many of you will no doubt recall the item in our April News about the CRPL transmitters which were to go into operation the first half of May in Illinois. We know a lot of you listened for them with negative results. These results were quite justified, for the rigs didn't go on -- at least not in May.

They have since, however, and not without escaping the notice of more than one PRP observer. Jack, W9ARN, noticed them, and passes along word from W9VBH, Havana, Illinois that the stations are right near the latters QTH. Breaks were made every half hour to give the call letters.

Another and more detailed report comes from Leonard, W7SP, of Saltair, Utah. He sent along a graph of signal strengths taken every minute for one hour (1755-1855 on July 14th) from amateur signals, KA2XBA (Collins in Cedar Rapids), and the A0 signals on 49.89, 49.92, and 49.96 Mc. These latter ones are from the WWI stations. Notice anything familiar about those frequencies? Right you are...they're the ones listed in the lead article in August QST. These Illinois rigs are the same ones that will be (or have been) sent to South America for the duration of IGY. That article, by the way, is on the recommended reading list, if you haven't already done so.

V.O.A. Beacon

Mentioned on several of JA2GR's recent reports has been the Voice of America AM broadcast station on Okinawa. Seems that this makes a fine sporadic-E beacon for Japanese amateurs. Frequencies reported have been 50.15 and 50.35 Mc.

Norwegian Beacon

LA2AD sends us the following information concerning a beacon transmitter being operated at the Norwegian Institute of Technology in Trondheim. "Frequency: 145.5 Mc., input: 50 watts, antenna: folded dipole plus director plus reflector, direction: NNW, keying: A2 (500 cps.), text: TEST LH2A X (where X stands for a control letter which is changed regularly once per week). Unfortunately, the transmitter is making interference on some measuring equipment in the same building and therefore has to be switched off when measurements are made. Accordingly we cannot give an exact schedule for the transmissions, but they will usually be from 1500 to 0800 GMT next day and during weekends continuously."

Latest W1REZ Schedule

W1REZ, Fairfield, Connecticut continues to do a terrific job of transmitting 144 Mc. beacon signals. Here is the 144.105 Mc. schedule for August:

Time (EDST)	Antenna Direction	Text and Speed
0630 to 0700	Northwest	A DE W1REZ (8 wpm.)
1830 to 1900	"	" "
2300 to 2315	"	" "
2400 to 0030	Southwest	IGY TEST DE W1REZ SN (16 wpm.)

[Aug 57]

The purpose of the IGY transmissions is for meteor scatter and tropospheric work. Ray would appreciate a postcard from anyone hearing his scatter signals during the 2400 to 0030 sessions.

Still other tests are made on the Regular World Days as follows: 2000, 2100, and 2200 EDST (weekdays); and 1300, 1800, 2000, 2100, and 2200 EDST (weekends). Ray sends the IGY TEST for the first 10 minutes of each hour, and then listens for five minutes. Antenna heading is Southwest. Come on gang -- make use of these transmissions! Then let us and W1REZ know about it.

More About VE3AGU

Jerry, VE3AGU, of Ottawa, Ontario sends along the following info on his beacon setup: The frequency used is 50.1 Mc., and power input to the 25-foot high vertical coaxial dipole is 30.5 watts. Emission is A2 (1000 c.p.s. tone), and identification is DE VE3AGU Ottawa at 15 w.p.m. Operation is irregular, but the beacon will be run as much as possible during the Special World Intervals, and when conditions indicate the band may be open.

COMING OUT TO SEE YOU!

One of the less satisfactory aspects of sitting here at a Wethersfield desk, evaluating and transcribing PRP logs day after day, is the ease with which one can lose track of what the writing in those report form columns really means, in terms of the people who put it there. There's no doubt at all in my mind that I have a better picture of activity and conditions, v.h.f.-wise, in the areas which I've managed to visit so far. I sincerely hope the same thing holds true in reverse--that is--that I've been able to give the people I've talked to a better idea of what PRP is, what it can do, and how they can best contribute toward it.

This should give you some idea of the reasons behind another and more extensive trip which I'm to make in August. It will give me a chance to meet a lot more of you, which is good, and I'm really looking forward to it. Below, I'm listing the stops along my route, and the dates when I'll be there. If you live in or near any of them, please get in touch with the group indicated for exact times and places. Don't let me miss seeing you!

Dallas, Texas -- August 12 (Dallas Amateur Radio Club).
Amarillo, Texas -- August 13 (Panhandle Amateur Radio Club).
Albuquerque, N. M. -- August 14 (Sandia Base Radio Club) (not firm yet).
Phoenix, Ariz. -- August 15 (Arizona Amateur Radio Club).
Long Beach, Calif. -- August 16-18 (Southwestern Division Convention).
Santa Barbara, Calif. -- August 19 (Santa Barbara Amateur Radio Club).
Fresno, Calif. -- August 20 (Fresno Amateur Radio Club).
San Francisco, Calif. -- August 21 (San Francisco Radio Club).
San Jose, Calif. -- August 22 or 23 (Santa Clara County Amateur Radio Assn., West Valley Amateur Radio Club) (not firm yet).
Sacramento, Calif. -- August 24 (K6GFJ).
Portland, Oregon -- August 25 (Oregonian Amateur Radio Society).
Seattle, Wash. -- August 26 (West Seattle Amateur Radio Club).
Butte, Montana -- August 27 (Butte Amateur Radio Club) (not firm yet)
Salt Lake City, Utah -- August 28 (Utah Amateur Radio Club).
Omaha, Nebraska -- August 29 (AK-SAR-BEN Radio Club) (not firm yet).
Chicago, Ill. -- August 30, 31, September 1 (ARRL National Convention).

NOTES AND QUOTES

V.H.F. Slide Show In The Works

Some of you may have seen the very excellent slide shows, "The First 30 Years of Radio," and "The Story of DX," produced by the Antique Wireless Association. Hank, W2UTH, reports that he has been charged by the group to produce a similar show telling the story of "The World Above 50 Mc." He would like very much to know whether anyone can furnish any of these items: Color slides of old v.h.f. gear; old v.h.f. gear that his group could photograph if not too far away; old pictures of v.h.f. installations which they could copy (originals, which need not be color, to be returned); color slides of the better known present day setups, especially with the operator in the picture.

[Aug 57]

Anyone able to furnish such things is urged to get in touch with Henry A. Blodgett, 515 Victor-Holcomb Road, Victor, New York. The resulting slide show (with tape commentary) will be available to all clubs and conventions for the price of the postage. This should give v.h.f. quite a boost, so help these fellows out if you can.

Tubes For CT1CO

Manuel, CT1CO, of Lisbon, Portugal has been offered a spare antenna rotator by a kind PRP observer in response to the June PRP News request (see "Bottles for Bottles", page 4). He still lacks transmitting tubes, however, which are almost impossible for him to obtain in his country. These need not necessarily be in the 4-125A/4-250A price class. Manuel would be very happy with such types as the HK257B, 5D24, RK65, AT-340, 4D23, etc. What say, can anyone help him out?

Unusual Frequency Shift

Here's a portion of an interesting letter received from "Red", W8ARR, a while back: "The primary purpose of this note to you is to report an occurence which happened May 15th at precisely 2323 EST, and was experienced on the signals of our friend W8KAY on 144.3 Mc. A1 transmissions directed by him at W9REM. Usually at this hour I observe Art's frequency to hear what he may be doing, and in this instance I turn my beam toward the west of Detroit to search for the station he may be working but attempt to keep Art's signal audible by positioning while still pointed west. This I have done on numerous occasions as for his nightly schedules during the winter with W9WCK.

"At the time given above, I heard Art's signal within a small radius of beam swing develop into two distinct and simultaneous (to the ear) signals, each apparently in perfect key timing, but having a slightly different tone quality. I was able apparently to peak the frequency of either signal, creating a tonal change while doing so. I checked subsequently in other directions, and found no such effect. Returning to the small arc of reception towards the west, I was able to note the same effect on his signals as above. A few minutes before this occured, I had noted a small amount of aurora whistle on the 144.3 Mc. signal."

W8ARR judged the spacing between the two distinct signals to be on the order of 200 cycles or so. He wonders whether anyone with more super-selective receiving gear than his own has ever noted this effect. Any comments?

AROUND THE PRP OFFICE

Here's one reporting suggestion which can make life easier for both you and us. It's simply this: Please don't put down antenna headings for contacts when your beam was pointed directly at the other station. This saves writing on your part, and a considerable amount of checking on ours. The only exception to this rule might be aurora and back-scatter work in the few cases when the best heading does correspond to the direct one.

A few observers have complained of poor (or no) service on their requests for additional reporting forms and/or return envelopes. Actually, we have set up quite a fool proof system here at the office to make sure that all such requests are answered on the very same day they are received. In fact, this is the first thing checked for when report logs come in. The difficulty usually lies in the third class mailing used for the forms, for obvious reasons of economy. This means that such mail doesn't go through until the first class mail (at the various post offices) is sorted. The answer, plainly enough, is for you to let us know of your needs more than a few days before you run out of materials. We realize how irritating it can be to run out, so won't you please help us avoid all that by giving plenty of notice?

And...to close on a cheerful note...congratulations are in order for PRP Evaluator Connie Campbell, who has just acquired a new license and call -- W1CIE. Mrs. W1CUT can be found on two meters quite frequently these days, both mobile and at the Campbell's Granby, Connecticut home. Connie, by the way, will have the job of getting out next month's News, while the writer is out giving pep talks to make more work for himself when he gets home. BCNU

With 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

MPS/hwh

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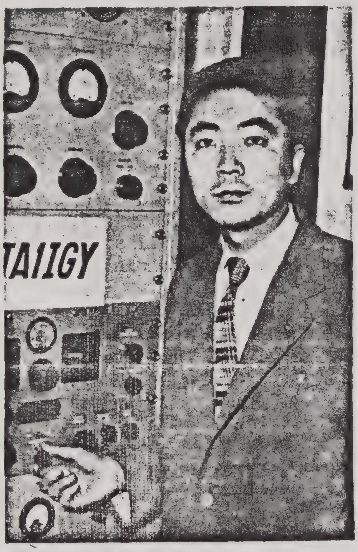
THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

NUMBER 9 SEPTEMBER, 1957

MORE NEWS ABOUT THAT BIG TEXAS BEACON
THE VERY LATEST PROPAGATION RUNDOWN
NOTES AND COMMENTS FROM ALL OVER



As part of IGY research, the Japan Amateur Radio League has set up the station, JA1IGY. The above picture shows Shozo Hara, JA1AN, at the controls.

Output	30 watts, approx.
Frequency	50.50 Mc.
Emission	A1 or A2
Identification	V V V JA1IGY Tokyo (automatically keyed)
Time	0000-1000 GMT
Antenna	J Type vertical

The JARL would appreciate hearing from those who receive JA1IGY's signal. (And so would we!) They plan to send out a "commemoration card" to amateurs who report reception to them.

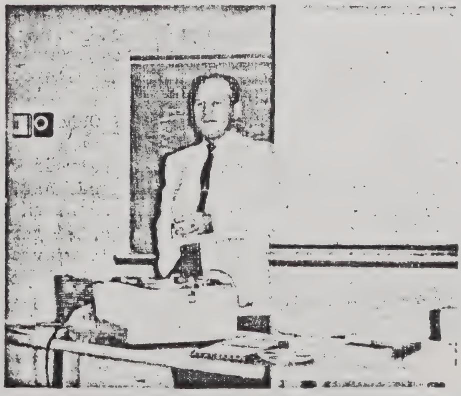
DID YOU KNOW?

There's been a lot of publicity recently, in both newspapers and magazines, about the International Geophysical Year. We've been digging through our file of articles here in the office and have discovered that most of the write-ups deal with particular phases of the IGY. Here are a few interesting "generalizations."

The IGY symbol was designed to point up the world-wide nature of the research. It shows the earth, half sunlit, half dark. The South Pole is shown sunlit to illustrate the data that IGY investigations will add to Antarctic knowledge. The satellite is pictured since it is one of the most outstanding instruments that will be used during these eighteen months.

There are 58 nations officially cooperating in IGY with another 12 participating unofficially. This is the greatest number of countries ever known to work together in peaceful scientific research.

Each nation will shoulder the cost for its particular program. Estimated world-wide cost is $500,000,000. The United States will spend approximately $39,000,000, not counting Defense Department expenditures for launching satellites and for Antarctic expeditions.



RIGHT: That's Hub Harrell, W5FAG, Albuquerque, N. M. Hub played some of his scatter tapes at the August 14th meeting. W1VLH was also on hand with details on v.h.f. propagation, PRP, and satellite tracking.

[Sep 57]

The idea of IGY was born in April, 1950, when Dr. Lloyd Berkner, president of Associated Universities, Inc., New York, suggested informally that it was about time to take another good look at this planet of ours.

Dr. Joseph Kaplan, University of California, is directing all U.S. activities. Dr. Sydney Chapman of the U. of Alaska's Geophysical Institute and of the High Altitude Observatory, Boulder, Colorado, is heading the international program.

The new IGY is the third such international venture since 1882, but none of the other programs have been on such a large scale.

Just a few facts to quote to your grandchildren, either now or in the future!

MAPLELEAF MISSION

Last month's News carried a write-up on that big, big beacon located in El Campo, Texas. We have some further information on the subject which might prove helpful to you in keeping an ear out for this super signal. The call is KK2XFS and the official name of the project is Mapleleaf Mission.

Our information is taken from letters received from W4RMU. The information is not, as yet, complete, but we'll give you the picture as we see it now.

Proposed departure time for the August 1st operation was set at 1200 EST. We haven't heard whether the flight was made. Your reports show no reception of the signal on this day so we doubt that the operation was completed.

However, August 8th operation has been definitely confirmed. W4RMU heard what he called the strongest scatter signal ever at 0900 EST. It was a good S8 signal with definite multipath characteristics, and it faded occasionally to S5. This kept up until 1530 when W4RMU had to stop listening. Signal strength was still around S7 to 8. There was a Sporadic-E opening around noon and the signal rose to many db. over S9.

We gave your reports a quick going-over and learned that W0IBL in Mt. Vernon, Missouri, also heard KK2XFS on this day. At 0615 CST, the signal came through with S9 bursts and a howl on the carrier. At 0818 he could hear it with his antenna turned in any direction. It was still S9 at 1341.

Reception of KK2XFS was also reported by W7SP in Saltair, Utah.

So keep an ear out for this signal and be sure to send reports of it in to us. In turn, we'll keep you informed of operating plans and schedules to the best of our ability.

Along the Same Lines

We've been discussing KK2XFS...KA2XBA is another well known call. Perhaps you are familiar with the system used in assigning calls to experimental stations but, if not, you'll no doubt find it interesting. We took our information from FCC INF Bulletin No. 13.

Experimental radio stations are usually assigned calls beginning with the letter K. The next letter designates the radio district in which the station is located. This is always followed by the numeral 2 and the letter X (for experimental). A group of not more than two letters follows and these are the particular station's identification.

Learning about this system brought order out of chaos as far as we were concerned. KK2XFS...KA2XBA... comes like second nature, now!

MORE CALIFORNIA TO HAWAII ON 144

Remember that 2-meter contact between W6NLZ and KH6UK that took place on July 8th? A new DX record of about 2540 miles was set. Well, they did it again! On August 18th at 1800 EST, KH6UK's automatic transmission was heard by W6NLZ. Signals were weak and fading until 1850 and the contact lasted through until about 1915. Your report forms for the second half of August haven't started to arrive yet, so we are unable to get an idea of what was happening on the band at that particular time. This California-to-Hawaii haul is beginning to look promising!

[Sep 57]

V.H.F. TO THE RESCUE

Many of you, no doubt, have heard that Herb, K8CIC, was hospitalized recently, preparatory to a spinal operation. However, his radio activities weren't in the least suspended. Two of his ham buddies in Grand Rapids, Mich., set him up with a 90 foot antenna on the hospital roof. Herb was busy operating all during his hospital stay and even sent us a PRP report! Back home now, feeling fine and raring to be up and around, he writes us: "Received almost 400 cards from 7 states and sure am proud to be one of the v.h.f. gang." We agree that the two hams from Grand Rapids and the hundreds of you who sent cards were indeed very thoughtful. K8CIC, by the way, was recently awarded a certificate as Honorary Member #2 of the 6 Meter Club of Dallas.

THE HONOR ROLL

Listed below are the calls of observers who earned their certificates during the past month. Certificate-bearing members now total 199!

W1CSG
W1FVZ
W1LGE
K2DNF
K2LZL
K2QLA
K2RJN
W2ZKE
W3KMV
W3PMG
W3VAM
W3ZYK/
W3BGI
W4DPE/BNZ
W4DWY
K4EKO
K4GYZ
W4RMU
K5DCQ
W5FEG
W5FXN/
K5ABW
W5LFM
W5MJD
W6GCG/
W6LHV
W6NLZ
W6PUZ
W7ACD
W7BWO
W7SP
W7UFB
W7WSP
W9AAG
K9ETD
K9HMB
W0BTG
K0CEC
K0CLJ
K0GKR
W0ODI
W0SMJ
KL7TOB
VE1EF
VE3AIB

There's a large number of observers who are only one or two reports away from a certificate, too, so we hope to have many more calls to add to the "honor role" next month.

While we're on the subject, we thought we'd point out one fact. One of the requirements for a certificate is that six consecutive reports be submitted. For instance, if you have sent in three reports in a row and then skipped a reporting period, your run of reports is broken and you have to start from scratch. We wanted to call this to your attention because we really like to hand out these certificates!

ABOUT BEACONS - SKEDS

ZS2PE

A letter from ZS2Y has just been received. He writes that PRP Beacon ZS2PE is now in operation. Here's the schedule for September:

Sept. 1	0800 to 2000 GMT
Sept. 2 to 16	1000 to 2000 GMT
Sept. 17 to 21	0800 to 2000 GMT
Sept. 22 to 24	24 hours per day
Sept. 25 to 30	0800 to 2000 GMT

ZS2PE's frequency is 50.230 Mc. and power output is approximately 50 watts feeding a folded dipole. "The call sign 'ZS2PE' is sent followed by various spaces and marks. The beacon is set up at a downtown office." ZS2Y writes that the site is OK for transmitting but not too good for receiving, due to heavy traffic in the street below.

Skeds?

Stew Sparks, K4GYZ, writes, "I would like to work with stations in two respects - those wanting to try some scatter skeds through Georgia and those hardy souls who would like to try a cross-country 5 or 6 station message net. We can work from here a good 225 miles to the NE and about the same west on c.w. without too much sweat so if you know anyone who wants to try the message new, let me know please. With good scheduling, etc., I believe a 300 mile scatter would be about 90% 'in there' at all times - let's give it a try at least."

[Sep 57]

Attention all 6 meter observers in Japan! VS6CJ in Hong Kong asks that you beam in his direction between 1100 and 1300 GMT - particularly on Saturdays. Let's see what can be done about some Hong Kong-Japan schedules!

Are there any early morning risers among you who bemoan the lack of activity on 6 meters? If so, you're not alone. W1SUZ of Winsted, Conn., says that he arises at 0510 EST, goes downstairs, turns on the receiver, and puts on the coffee - in that order. Dick monitors until 0545 when he leaves for work but very seldom hears anything. He can recall the time when Sporadic-E openings were easy to detect during the wee hours because there were plenty of stations operating, but now his listening is practically in vain. Perhaps some beacons in operation at this time or some skeds with other early birds would be of benefit here.

W6PUZ in Pasadena, Calif., asks that we pass the word along to you that he will be active Saturday and Sunday mornings at 0500 PST looking for scatter signals. His frequency is 50.002 Mc. and he will transmit the first 2 1/2 minutes of each five minute period.

From VQ2PL in Livingstone, N.R., comes the request that 6 meter observers, particularly those in Europe, keep a lookout for Rhodesian stations between 1630 to 1800 GMT each day. He reports the 10th of August as a real "high" for reception of European stations at his location.

WHAT'S NEW ON THE PROPAGATION FRONT

144 Mc.

The second half of July showed a quick dip in auroral activity on 2 meters. There were a few openings noticed but they were slight ones.

On the 22nd, Jack, W8PT, heard VE3DSU, W8URO, W8WXV, and W8KAY with his antenna straight north. This was around 2330 EST. About two hours later, W8KAY worked W8URO via aurora. He also caught a short opening on the 23rd at 2325 EST, when he worked W9REM and W8WXV.

Both W1HDQ in Canton, Conn., and W2BLV in Haddon Heights, N. J., heard evidence of aurora during early evening of the 19th of July. This was on a very weak opening and signal strength was way down. W8EHW heard W8KAY and VE3DSU at 2030 EST on the 18th.

From the many remarks on your reports we know that quite a bit of tropospheric work was done, however. Many of you were able to add a number of new states to your total during these two weeks. W2ORI was particularly enthusiastic about working W0IFS on the 17th. This was his 29th state and his first Minnesota-New York contact.

This good tropospheric condition lasted well into the first two weeks of August with stations 700 to 800 miles apart able to work each other easily. Auroral activity also picked up. Openings came oftener and lasted longer than in July.

On the 3rd of August between 1915 and 2000 EST, W2ORI heard aurora sigs from stations to the east of his location in Lockport, New York. These were peaking on a beam heading of 10 to 20 degrees west of north. He could hear no stations to the west of his QTH.

W1CAX in Coventry, Conn., caught W1MMN in Orange, Vermont, on the 6th at 1939 EST. the bottom fell out of this opening about one minute after the QSO began, so W1MMN swung his beam south and they completed the contact via direct wave c.w.

W2CBB heard W1AZK's aurora signal during late evening of the 12th. He tells us, "For a good fifteen minutes W1AZK was the only signal heard with the typical aurora characteristics. All other signals were normal and peaked up with antenna heading direct. Then about midnight, all signals assumed the typical aurora tone." He heard W8WXV, W1AJR, W8KAY, and W1REZ at this time. VE3AIB was in on a short opening around midnight of the 13th when he heard W2NLY, W8KAY, and W1CAX.

REGULAR WORLD DAYS

September	October
1st	22nd
23rd	23rd
24th	24th
30th	

Remember to monitor WWV or W1AW for ALERT and SWI information!

[Sep 57]

W4WNH in Elizabethtown, Kentucky, wonders whether anyone heard his automatic beacon on 144.099. Speed was about 20 w.p.m. and it was in operation a great deal of the time from 1800-0000 CST and from 0200-0500 during the peak of the meteor shower. All directions were covered although the heading was usually northeast or west. He will continue to operate it without regular skeds or headings, but it would be a good bet for you to listen for it between 1800-0000 and 0500-1000.

50 Mc.

July 16 through 31 were busy days for the 6 meter man no matter what his location. Auroral propagation hit a new low for this year but there was plenty of single and double hop Sporadic-E.

On the 25th of July at 2200 EST, W8EGN came across a "regular pipeline into Alabama." He heard K4JGO, K4COX, W4HEB, and K4HJB. On the same evening, W3KMV in Rockville, Maryland, received W5SFW, W0QMT, W4HOB; double hop brought in W7-land. W3TIF also worked into this district and heard W7NFC and W7ERA.

The day most worthy of particular notice was the 26th, however. We received all sorts of enthusiastic comments about band conditions on that date. W4HHK in Tennessee heard and worked a lot of W5s around 1000 CST. A few minutes later, the W6s started reaching him on double hop. Many stations reported hearing Jack, TG9JW, at 1200-1300 EST. Jack's signal boomed in to K4HTO with an S9. K5ABW and W5FXN worked him off the back of their beam.

W7INX and W7RGS reported that W7AAD, Oregon, heard but did not work YV1RL and YV5AZ! The YVs had good strong signals. Cuba was also coming through to him.

As we said, this 26th was some day! CO2XZ worked XE1GE for the first Cuba-Mexico QSO. CO2ZX writes that he worked him, too, just a few minutes later, at 1400 EST. XE1GE's signal was reported S8 by CO2ZX.

Conditions held up right through the end of July. During the afternoon of the 31st, K0CLJ worked a number of W6s, among them W6WVK in Vallejo, Calif. Says Walt, "Got quite a bang out of W6WVK's 5 watter. What a nice signal he had under adverse band conditions!"

Conditions during the first two weeks in August weren't quite up to the high record set in July. K2HPN was in on what was perhaps the strongest auroral opening. On the 5th of August between 1900 and 2000 EST he worked W2YYI and W3RUE. With a NW antenna heading he also heard W1ELP, W8HRV, W8HXT, W1FOS, K2RRG.

August 7th proved a profitable day for those who were monitoring the band. W4DWY in Arlington, Va. wrote us that between 1900 and 2100 EST he heard stations in Florida, South Carolina, Louisiana, Texas, Arkansas, Oklahoma, Minnesota, Iowa, Illinois, Ohio, Alabama, and Mississippi. Not bad for a day's work!

We got a chuckle from this report. W5FYW filled out his form in this manner: Aug. 12, 1930-2200 CST, W1VLH, Dallas, R5, Prop-sound waves. We're happy to learn that he enjoyed our Project Soop's talk!

August 8th seemed to be a good day for West Coast stations. K6GOX in Fresno was on the air from 0935 to 1225 PST and heard such stations as W5MJD, W5ZTE, K4HZO, W4RMU, W4DPE, K5IQL.

Of course, there were other openings that we haven't mentioned here, but we've tried to give attention to the ones that seemed to be widespread. Here's for DX during the Fall months!

FROM HERE AND THERE

We hear from W9DSP, that W7ACD in Shelley, Idaho, has a "real nice set-up for 6 meters." He monitors the band continuously with automatic tuning, and has speakers located all over the house.

Stan, W3TFA, Carole Highlands, Maryland, is still holding forth on 144.65 Mc. although he has yet to make an auroral contact. The situation appears more promising because he heard stations as high as 144.4 Mc. during a recent auroral session. This is 165 kc. higher than usual.

[5057]

K0CRU of St. Louis, Mo., calls our attention to June 10th as being a very unusual day for skip. He says the 6 meter band opened up to Texas at 1700 CST. The opening moved south across 4s and 5s to Florida, progressed up the coast to the New England states. Next, VEs started coming through and he heard stations in Minnesota, North Dakota and Montana. The opening shifted down to California and over to New Mexico at 2300. A complete circle! Missouri is a good central location!

It looks as if the TE season might be arriving. A letter has just been received from TG9JW who reports that LUs started coming in on August 23rd at 2000 CST. More about this next month.

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A Reporting Hint

Joe, K2ITP, of Riverton, New Jersey, sent in this reporting hint which might prove helpful to other observers. "Write a date, the 1st and 16th of each month, on the back of several PRP return envelopes when they arrive from the PRP office. Then when the date rolls 'round, slip the report forms in the envelope bearing the last date of the reporting period just completed. There will be no question as to 'Wonder if I ever sent in that report or was it lost?' We find it helps lots."

May we put in a plea for more pictures? We enjoy receiving snaps of your shack, equipment, antennas, etc. The front page of the bulletin is a good place to show off that new set-up, so send those pictures in to us!

That winds it up for this month. We'll have to admit that this inexperienced hand trembled just a little bit when beginning this issue of the News, but we'll also have to admit that we enjoyed it.

W1VLH will be back with us come next bulletin-time. We hope that lots of you were able to meet him and to hear his PRP talk.

With 73,

Connie, W1CIE
Constance H. Campbell, W1CIE
ARRL-IGY Project Evaluator

hwh/CHC

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 10 OCTOBER 1957

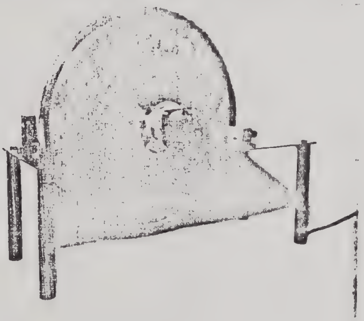
THIS MONTH:

W5FHS BEACON OPERATING

W1HDQ REPORTS ON THE URSI ASSEMBLY

FROM ABROAD — NEW COUNTRIES, NEW OBSERVERS

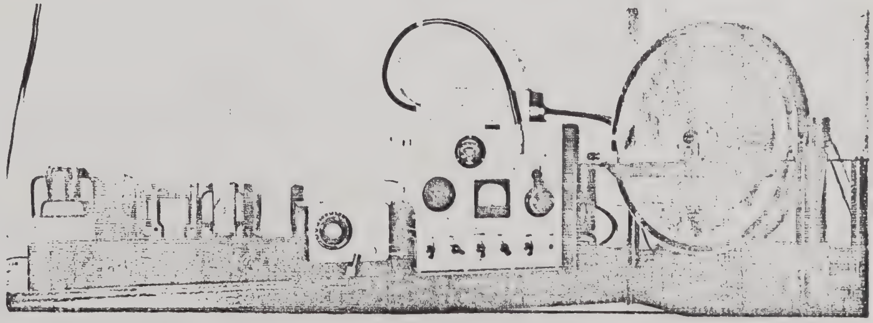
ABOVE: The 50 Mc. Portland, Oregon station of W7GWB-W7FVN, Edward Bear Sr. and Jr. W7GWB, the OM, shown. BELOW: The automatic code wheel and **transmitter at beacon station W5FHS.**



SHREVEPORT BEACON ON THE AIR

Last spring saw the beginning of a fairly lengthy stretch of correspondence between our PRP office and Mr. Ed Nuttall, W5FHS, of the UNITED GAS CORPORATION in Shreveport, La. It also saw the start of a very worthwhile PRP sub-project which should soon begin to bear fruit. Ed's job with UNITED GAS is Electronic Section Supervisor in the Research Department. He reported that his company would be interested in contributing in some way to our IGY efforts. Installation and operation of a beacon transmitter seemed a natural for them.

There were many points to be considered. Frequency and emission had to be settled. We both agreed that regular operation was a must for maximum benefit and that continuous operation would be nice. This latter posed the problem of covering the license 24 hours a day, an impossibility in this case. Most of us would have stopped right there and settled for a limited schedule, but not this crew! They devised systems to shut down automatically the proposed rig in the event of Conelrad alerts or operational difficulties, and proceeded to petition the Federal Communications Commission to allow them continuous operating privileges.



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This permission has been granted, and W5FBS will shortly be operating on a 24-hour basis. Limited operation was begun September 3rd, on an 8:00 A.M. to 5:00 P.M., five day per week schedule. This will be continued pending completion of the additional monitoring equipment required for continuous operation.

Operating frequency of the station is 50.55 Mc. Additional information was supplied by Ed as follows: "The code wheel -- 1 RPM -- is coded as follows: IGY IGY IGY de W5FBS W5FBS W5FBS, a short break, an 8-second dash, a short break, IGY de W5FBS, a short break, an 8-second dash, and repeat. Power input to the transmitter is 101 watts, efficiency 60 per cent. Power output as measured on a Sierra power meter and taking into consideration the standing wave ratio of 1.58 to 1, is 47 watts. Theoretical calculations gave a slightly better ERP."

Pictures of the transmitting equipment and the automatic keyer appear on our page one this month. The antenna used is a ground plane mounted about 40 feet above ground and in the clear.

A word of caution -- don't everyone deluge the FCC with petitions for unattended operation! The UNITED GAS group went to great pains to design automatic control equipment which would turn off the rig should any trouble develop, and it was only on this basis that their petition was granted. We hope to have a little more information on these control measures when they are installed and in operation. Meanwhile, take a look on 50.55 Mc. when you're tuning around, and take advantage of the W5FBS transmissions!

MORE BEACON NEWS

W6LHV Temporarily Off

Clarence Andrews, W6GCG/W6LHV writes that his beacon (50.25 Mc., see PRP News No. 7, page 5) was taken off the air by a micro switch failure on September 3rd after operating for 560 hours with no maintenance. He notes that when the switch failed it had a total logged time of 660 hours for a total of 17,900,000 operations. This amounts to just about ten times the original guarantee! The beacon will be put back into operation in October using the call W6GCG at about 9 w.p.m. A2 emission.

New Frequency For W4FJ

Ted, W4FJ, whose two-meter beacon has been heard locally here in Connecticut via both auroral and tropospheric propagation, writes that he has moved down to 144.25 Mc. "It was just too lonesome up near 145, hi! However, when alerted to an opening I either take it off for manual operation or shift it up to 144.5." In the works is an amplifier similar to the one in the February, 1957 QST, but using a 4CX300A ceramic tube.

W1REZ Transmissions Continue

Ray Bohmer, W1REZ, of Fairfield, Connecticut writes that he will be unable to keep his 2400 to 0030 EDST schedule except on World Days. This still leaves him, however, with the following transmissions:

0630 to 0700 EDST	Antenna Heading - NW	Text - A DE W1REZ
1830 to 1900 EDST	" " - NW	" - A DE W1REZ
2300 to 2315 EDST	" " - NW	" - A DE W1REZ

These are all with 1000 watts c.w. on 144.149 Mc. Ray has been working as hard on this beacon business as any individual we know of, and we hope you're taking advantage of his efforts by listening for these skeds.

THE U.R.S.I. GENERAL ASSEMBLY -- A BRIEF REPORT

by E. P. Tilton, W1HDQ, V.H.F. Editor of QST

Late in August your V.H.F. Editor had the pleasure of attending the XII General Assembly of The International Scientific Radio Union (URSI) at Boulder, Colorado. The First worldwide meeting of URSI to be held in this country since 1927, it was probably the most important and widely attended of any. Top-level scientists from at least 26 member countries took time out from their heavy IGY schedules to come to Boulder and discuss their mutual problems. To have been privileged to sit in on their informal discussions and technical sessions was an experience this reporter will not soon forget.

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Hearing these world-renowned physicists talk shop presented a fine opportunity for sensing the great potential worth of our ARRL Propagation Research Project for the IGY. The world's wave propagation problems are far from solved, and again and again we ran across areas of conjecture where amateur operations may provide useful evidence that would be obtainable in no other way. There was great interest in the record 144-Mc. work of KH6UK and W6NLZ, for example. Dozens of delegates to the Assembly came to the writer to get more information on it. Without exception, these people voiced the strongest praise for amateur work of so high an order.

There was much talk of transequatorial scatter, the ham-discovered phenomenon that was largely responsible for our entry into the IGY picture originally. The worth of amateur observations in the study of this, and in learning more of auroral and sporadic-E phenomena was reaffirmed by many.

What is double-hop sporadic-E? Do we have propagation over double-hop distances, when there is no evidence of single-hop closer in? There is no positive answer as yet. PRP, particularly with the help of consistent and careful submission of negative reports, might provide useful evidence. What about that long east-west skip on 50 Mc. that occasionally accompanies an aurora? Is it what is sometimes called "aurorally-induced sporadic-E" or is it merely an aurora that is overhead? If the latter, why doesn't it affect 144 Mc., as well as 50? Auroral heights have been measured up to several hundred miles above the earth; does this mean that under optimum conditions auroral propagation may be possible over greater distances than we have yet experienced?

These are just a few of the ideas that were hashed over in informal lunch-time bull sessions at the URSI Assembly. They are typical of the sort of questions that discerning v.h.f. men everywhere are asking. The International Geophysical Year will almost certainly provide some of the answers -- and amateur v.h.f. enthusiasts are in a fine position to help the cause along.

OVERSEAS NEWS

Swedish Hams Ready For Six

Quite a number of letters came in this past month from fellows in SM-land anxious to take part in PRP. Many of them are all set up on 50 Mc., both receiving and transmitting, and more will be on shortly. Axel Lindgren, SM3AST, reports building an 829B transmitter and 2-element yagi, and hooking up RF26-RME receiving gear. Axel will be on every evening between 1900 and 2300 GMT, and is eager to hear from State-side hams interested in working Sweden. SM3AST also operates 21 and 28 Mc.

Another ready station is that of Paul Gerstl, SM5CHH. Paul has a 100-watt QQE06/40 rig set up for A1, A2, A3, F2, or n.b.f.m., a three-element yagi antenna, and a converter-BC348 combination for receiving. He will be operating between about 2100 to 2200 GMT Monday through Friday, and from 0800 and 0900 on Sunday. Transmitter frequency used is 50.20 Mc., and SM5CHH listens between 50.0 and 50.5 Mc.

European Aurora

Lest anyone think that v.h.f. auroral openings are the exclusive property of the U.S. and Canada, we include the following somewhat belated reports from "across the pond." Geoff Stone, G3FZL, who is the RSGB IGY Coordinator, reports that the night of June 30th (remember that one?) gave the Gs their second aurora opening of the year (the first was on January 21st). GM3EGW of Dunfermline, Scotland, worked the following stations between 2240 and 0050 GMT, antenna bearing 50 degrees: G3KFD, G3KUH, G5MA, DL3VJ, and OZ7PB. Heard were CN4ZH, ON4CW, and DJ1VK. Activity was not particularly high that evening. G3FZL himself switched off about 2130 because of a severe thunderstorm so missed the whole show!

To further quote from Geoff's letter: "Unfortunately, because of the nature of the belt of auroral maxima, we are not so favorably placed as U.S. amateurs are. The aurora is a much rarer phenomenon in this country (or Europe for that matter) than in the U.S. as is obvious from the quantity of auroral openings that you have. I do not believe that there has been an auroral opening between some time in 1946/47 and January 21st of this year." So, you Ws, Ks, and VEs, count your blessings!

Another report on the June 30th aurora comes to us from Karl-Eric Nord, SM5MN, the VHF Manager for SSA. SM7BZX worked ON4LW, ON4ZH, DJ1VK, and DL3VJ on 144 Mc. about midnight GMT with RST 574 reports. SM7ZN worked various German stations at about the same time. Regarding other varieties of DX, SM5MN has this to say: "I have tuned across the band 49-52 Mc. almost daily at 1800 GMT. Several sporadic-E openings have occurred,

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but no amateur signals are heard so far. Only the sound and picture from the British channel 2 TV and harmonics from powerful shortwave BC stations have been identified on these occasions."

SP5BR In Poland Set On Six

One of the most enthusiastic letters to come in this month was from Eugeniusz Raczek, SP5BR. Gen must be a fast worker, for he's overcome all difficulties in finding radio parts, and has a fine six-meter station all set up and ready for action. All this and he was away from home for a month and a half during July and August! The transmitter at SP5BR is running nicely with a pair of 1625s in the final. Receiving equipment consists of a 6BY7 cascode crystal-controlled converter feeding a home-made 14-tube double conversion superhet. The antenna is a 4-element yagi.

Gen wants it know that he will be active on our 50.55 Mc. beacon frequency (and others), and wants very much to hear from stations interested in schedules and contacts. Why not drop him a line? The letter closed with : "73 -- I'm waiting for QSO. Let us begin the work on six!!!"

At least we thought it closed that way. Over on the other side was a postscript well worth repeating. "In 4 number the 'Das DL QTC' (DL short wave magazine) was described the QSO on 2300 Mc. (by the moon) between W1ITZ and DJ4UX on February 29th, 1957. It was the first April joke, but in 8 nr. the Russian amateur's magazine 'Paguo' (Radio) they copy that it was the record QSO, etc.! HI! HI! (In DL language, the word WITZ means JOKE!)

New TE Opportunities

Here's good news for South African stations seeking additional areas which can be worked consistently on six meters, and good news also for v.h.f. enthusiasts around the world seeking new countries. It arrived in the form of a letter from George Barrett, G8IP/ZC4IP of Limassol, Cyprus. George wrote in originally to tell us of some tests he was beginning with ZE2JV, and to get on our PRP mailing list. He reported that the Cyprus to Southern Rhodesia path has been unusually consistent on 28 Mc., more so than any other. A look at the map showed us that these locations are almost exactly on a north-south line, and that they are almost exactly equidistant from the geomagnetic equator -- that line which seems to have so much to do with transequatorial scatter propagation.

Well, you can guess that we didn't waste much time in sending a letter off to ZC4IP to see whether he would put his Eddystone 770R-BC342 receiving equipment to work gathering data for our IGY work. George not only replied in the affirmative, but said he would do his best to interest more stations, such as MP4BBL, Bahrein, in the project.

ZC4IP is prepared to receive and tape record c.w., AM, or n.b.f.m. signals between 19 and 165 Mc., and to transmit on 28.320 Mc. (or as near this as QRM permits) with 120 watts and cubical quad beam. At present, schedules are being kept each evening about 1700 GMT with ZE2JV (50.05 Mc.) to the south. To quote George: "Suffice it to say that tests on 50 Mc. with Southern Rhodesia, Northern Rhodesia, and South-West Africa are proving satisfactory beyond all expectations. Out of fourteen consecutive evenings up to last night, eleven openings have produced signals by what we believe to be transequatorial scatter, one evening has produced signals by what seemed to be normal F-layer path, and only two have produced blanks despite known activity. Ten evenings have produced cross-band QSOs between one or more of the countries listed and myself."

As for the future, and other possibilities, ZC4IP is prepared to run a limited number of schedules with other reasonably well-equipped stations willing to cooperate. Checks on 56, 70, and 144 Mc. can also be undertaken on a limited basis. What say gang?

More New Countries On Six

D. T. Bradford, VQ4EV, writes in with the news that the 50-54 Mc. band has been released to amateurs in VQ3 (Tanganyika), VQ4 (Kenya), and VQ5 (Uganda). He also reports as follows: "I am already equipped to receive in the 50-60 Mc. spectrum as are several other VQ4s. VQ5GF is ready with a transmitter, but has to build a converter (which he is doing!). I am building and will be on 50.25 Mc. AM and c.w. in the near future."

Help Get India Listening

Here's a prospective PRP observer located thousands of miles from any other 50 Mc. activity, and who'd like nothing better than to help put a new country on the six-meter

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map -- receiving-wise, at least. He's VU2CD of Bombay, India. Communications restrictions there do not permit ham transmissions above 28 Mc., but VU2CD is very eager to build or acquire 50 and/or 144 Mc. receiving gear, and to do what he can to contribute towards PRP.

Trouble is, that because of dollar restrictions and prohibitively high import duties, it is virtually impossible for him to secure the needed equipment. With gifts, however, the import story is quite different, and VU2CD would very much welcome such from any U.S. or other ham generous enough to part with them. He assures us that the sending of gifts would be fully reciprocated from his side, and is prepared to send handicrafts, curios, etc. in return for components. For further information, please write direct to Major K. E. C. Gillon, VU2CD, c/o Manager, Lloyds Bank Ltd., Hornby Road, Bombay, India. Thank you.

News From Cuba

Back over on this side of the world, we thought you might be interested in the following from CO2ZX, Havana, Cuba: "I have worked 24 states up to the present time (all are verified with QSL cards). The activity is fair in the Havana City area -- 6-meter stations active include: CO2TV (he uses v.f.o. and n.b.f.m. as well as AM), CO2XZ, CO2TP, CO2WF, CO2GT, CO2QY, CO2CR, CO2KM, CO2GX, CO2WL, and myself. There is no activity at the present time in the country.

"CO2JV is building a 6146 in the final. CO3YP is building a high power rig for 6; it will run about 300 watts. A tip to American 6-meter hams: Pse call in Spanish to Cuban hams, because only a few speak English." How's your Spanish, CMs? Maybe there's still time to get into an evening course.

V.h.f.s In Russia

Had to do a little research recently in order to answer a question sent in by W2SHU, and we thought the results might be of general interest. Amp wanted to know what frequencies above 30 Mc. were open to ham use in the Soviet Union. The answer is that the Russians have the use of 38 to 40 Mc. in addition to the 144 and 420 Mc. bands. There are two types of calls used. First, you will hear the regular "U" calls denoting the Russian "club stations". Second, there are the v.h.f.-only calls which are six digit combinations usually beginning with 0.

SEPTEMBER 1-15 IN BRIEF

This month's "wha hoppen" section won't be quite as extensive as usual. This was due to our desire to include, on the eve (we hope) of more worldwide 50 Mc. DX, as much news from our oversea friends as possible.

What Auroras!

Though present to some extent, our summer friend the sporadic-E opening, was definitely overshadowed this month by the northern lights. A glance at our 50 Mc. reports shows terrific auroral openings on the 4th and 12th, extending over nearly to daylight of the following days. A lesser opening showed up the evening of September 2nd. Throughout southern Canada and the northern half of the U.S., aurora's regular stamping ground, the opening of the 4th seemed the big one. Southerners , southwesterners, and westerners had their day on the 12th, however, when the aurora was apparently too far south for maximum results from the W1, 2, 3, 8, 9, and 0 strongholds.

This latter session was a "no holds barred" affair which brought the northern lights to sections where they had been seen but once or twice in a generation, and auroral propagation to amateurs who had only read and heard about it. K5DCQ, Irving, Texas, reports that: "Local police thought there was a fire in the northern part of the city -- chased the glow -- but to no avail." K6GOX sent in a Fresno newspaper clipping about "a woman who calmly told a police officer: 'It's San Francisco. The Russians have got a new kind of bomb.'"

Propagation-wise, history was being made, and our 50 Mc. reports show "first aurora contacts ever" for many stations. On 144 Mc., that band was open for auroral work almost continuously for the first few days in September. W3TDF's experiences pretty well sum up the story. Between 1550 and 2300 on September 2nd, Ray heard or worked 57 stations in 17 states and 2 provinces. Between 0001 and 0300 on the 5th he heard or worked 43 stations in 17 states. W3TDF points out that, unless your antenna tilts, an antenna bearing of nearly due west may be required for "deep south" stations.

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Here Comes The T.E.

There was certainly no dearth of transequatorial scatter reports either this month. The season got underway with a bang, too, for LU3EX observed evening openings to Mexico, TG-land, and sometimes points north on September 1, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14. CX1AQ worked north on several days also, with September 8th being the big one. Mauricio noted simultanious short-skip, TE, and possibly aurora, with many peculiar antenna headings. Often, stations a few hundred miles away would be received from all directions except north. On the 11th, at 0145, CX1AQ worked LU7DDG (some 300 miles to the west) with both antennas south. Sure sounds like the southern aurora!

Up at the northern end, September 6th was a big evening. W4EQM worked LU9MA and CE3QG; K4JJA worked LU7DDG, LU2DGA, and CE3QG at the same time that CO2ZX, CO2QX, and CO2WL were coming through; and K4KYS worked LU9MA whilst hearing Cubans and CEs. There was a good deal of this shorter haul work observed at the same time as the TE. The same goes for a little apparent backscatter from the south. Connected?

Another interesting point observed by several W6 (last fortress of vertical polarization) stations was that on occasion the TE signals could be copied well with vertical, but weakly or not at all with horizontal antenna systems. This should be accepted with a little caution, because of the many difficulties involved in making meaningful polarization checks, but the fact that a number of observers reported it may be significant. Among the 6s getting in on the openings were K6EPT and K6GTG who heard LU7DDG on the 12th. K6GTG also reports hearing LU8AE, LU5CK, LU3EX, LU9MA, and CE3CC. About the same time W6PUZ, K6OPD, and K6GTG all detected signals from YV5AC. This isn't transequatorial, but it is similar to some of the intermediate openings which we have had reported many times from South America, and which seem to come and go with the TE.

While we're in a transequatorial mood, it might be well to mention that we will be very interested in receiving 28 Mc. reports this coming season about TE (or lack of it) only. A goodly number of observers, we feel, are set up for ten meters as well as six (perhaps for overseas crossband contacts and the like), and we would appreciate your cooperation in noting 28 Mc. conditions over TE-type paths. This applies whether either band is open, or whether both are open or closed. More on this subject next month.

In closing, if almost daily band openings are getting you down, take heart in this comment from W4DPE: "Missed the South American opening due to work -- must stop letting work interfere with 6-meter operation!"

REGULAR WORLD DAYS: October 22, 23, 24; November 14, 21, 22.

SOLAR QRM

This month saw no less than three reports of some real DX -- 50 Mc. reception over a 92,900,000-mile path. Present distance record holders needn't worry, however, for there's not much chance of a two-way contact or a QSL. The DX operator involved was "our Mr. Sun", and his transmitter was a solar storm.

Peter Lowth, VQ2PL writes as follows: "At 1500 GMT observed a great increase in background level when the beam was pointed towards the sinking sun in the west." This was on August 31st. The same effect was noted a bit later on by Dick Stevens, W1SUZ. Between 1530 and 1800 EST (2030 to 2300 GMT) a series of fair to strong bursts were received. "Each burst seemed to be followed by a lower energy level peak with airplane-type flutter."

Cal Graf, W5IFM, writes that on September 2nd "I was listening to six and noise (hiss) peaked at resonant point of 4-el. WS yagi about 41 feet high. At 0800 CST, noise S7, sun at about 21 degree elevation. At 0835, S7, and at 0910, S4, elevation about 38 degrees. Noise dropped off rapidly as antenna moved away from sun." The reverse was true too, and after 0910 the noise level dropped back to that of the converter. Cal did a little research, and found that "Radio Astronomy" by Pawsey and Bracewell describes a noise storm from the sun as being strongest from 1 to 15 meters, and lasting hours to days. The noise comes through as a random hiss.

CONSISTENT REPORTING HONOR ROLL

Congratulations are in order for the stations listed below, for these are the fellows who have qualified for the PRP Consistent Reporting Award during the past month:

[Oct. 57]

W1DGA
W1MEP
W1REZ
W1VSE
K2CEH
K2HCY
W3AJD
W3BJU
W4GJO
W4OLO
W5DFU
W5LID
W6AHE
W8KAY
W8MVN
W8SSO
K0JNH
SWL03
SWIF1
JA1ARC
JA7BL
ZE2JV

This brings the total number of issued certificates to 221. Many observers have already qualified for endorsement stickers, and we hope to be able to list these next month, as well as to say that the stickers themselves are in the mail.

How are you coming with your sticker and endorsements? See the "News" for May and June for full details and rules.

NEWS AND NOTES

Doug Welsher, W7EWO, of Benson, Arizona sent through the following interesting thoughts recently: "During the Perseids Shower and for three or four days after I heard bursts of PHONE signals. The audio on these bursts was of good quality, perfectly readable. The station or stations heard were evidently in local QSO somewhere, and as a result I didn't get any useful information, such as QTHs. These bursts would last long enough to hear three or four words plainly per burst. I might also add that these operators were speaking at a slow or normal rate. Maybe we have all been off on the wrong track using high speed c.w. for meteor propagation. A person with a little effort can rattle off 100 to 120 w.p.m. by voice against 40 to 50 w.p.m. via c.w. with much effort at both ends of the circuit. Naturally on phone we would lose the lingering tail from the meteor, but with twice the rate for transmitting information the tail wouldn't be needed. Well, food for thought anyway."

Sam King, K4EUS, wrote the following after trying fruitlessly to line up some northern contacts for W4LTU during a trops opening: "What I'm getting at is a standardized means of spreading the word of unusual band conditions. If there is such in the v.h.f. gang, I am not aware of it. However, I've heard W3GKP sending 'QST QST QST AURORA AURORA AURORA DE W3GKP'. This call alerted me on September 9th to the brief aurora opening we had. I propose to use GKP's method of spreading the word the next time the occasion arises. I talked to GKP later, and he said next time I work 4LTU, just call him -- Hi!"

BACK HOME AGAIN

One thing sure, the writer's recent whirlwind tour of points west left him with an awful lot of very nice memories. It was my first trip to anywhere west of Chicago. I saw a multitude of fascinating places, met loads of wonderful people, and took part in many fine meetings.

A full account of these wanderings would, of necessity, fill many pages. Any shorter story would have to leave out much deserving of mention, but, even so, the urge to tell at least a little is too strong to resist. W5TUU, W5FED, W5ME, and all the rest in Dallas did a fine job of setting up the first meeting of the trip, and introducing me to BIG TEXAS. The same goes for K5HTH (even if he did keep one of my slides in his projector) and company in Amarillo. This stop gave me a chance to meet the parents and parents-in-law respectively of ARRLers W1CUT and W1CIE -- Mr. and Mrs. Campbell down from Pampa, Texas. That's where Laird and Connie will be heading, by the way, about the time you read this.

Over in Albuquerque, Hub Harrell, W5FAG, and others of the Sandia Corporation gang saw to it that I got a good picture of their fair city -- everything from picturesque Old Town (and the hot Mexican food) to the A-bombs over at the Corporation (didn't really get to see the latter). Then it was on to the ARRL Southwestern Division Convention in Long Beach. Director Walt Joos and his wife met me at the airport, and negotiated the Freeways to the headquarters hotel, the Lafayette. No trouble finding the place -- its roof bristled with beams, fed by on-the-air kilowatts in the Solarium.

The Convention was great. All facets of our hobby seemed well covered, including earth satellite tracking, for W6VZA and members of the San Gabriel Valley radio club were on hand to demonstrate their new six-foot tall "Microlock" receiver -- sensitivity .007 microvolts! Personal highspots included the winning of an Eimac 4CX300A tube (one of the long long list of doorprizes), and a visit with John Chambers, W6NLZ. A group of us sat hopefully through the sked with KH6UK. No luck that night, and none of us dreamed that a second successful contact would be made the very next evening!

Then up to Santa Barbara, where Lloyd Jones, W6DOB, and his club members were kind enough to put up with one very ill and voiceless Project Supervisor. Don't know for sure whether it was the Asian Flu or not, but I sure felt awful! In Fresno, the following day I enjoyed the hospitality of Bob Cooper, K6EDX, including buzzing about in an Austin-

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Healey and a backyard swimming pool. With all this, I understand that Bob is now, for some reason, back on six meters -- just in time for the F2.

The next meeting was in cosmopolitan San Francisco (love that naturally air-conditioned climate). I owed my hotel rooms (WESCON filled S.F. up so full that I had to switch hotels in mid visit) to the last minute efforts of Mrs. Rose Buckley, the XYL of W6GGC. Chuck Bey, W6PHS, showed me the edible delights of Fisherman's Wharf, besides transporting me to the meeting, held near Twin Peaks which afforded a spectacular view of the city. The following evening it was south to Santa Clara via rented car for a meeting arranged by Director Harry Engwicht. Next morning saw an extremely interesting tour of some of Stanford University's facilities, and an enjoyable meeting with Dr. Villard, W6QYT, and some of his pleasant and talented associates.

Then it was back to San Francisco and on to Sacramento -- which was the scene of a very nice informal get-together at the new home of Art Bachelor, K6GFI, whose call we mannaged to slaughter month before last. The next day it was Portland, Oregon. Here, Walt Manning, W7ERA, and Jim Strickland, W7SEZ, gave me a really splendid tour of the city and vicinity and a multitude of v.h.f. stations. This included the dream "shack" at W7ERA. After the meeting, Jim took a few of us through the Techtronix plant, where he spends his weekdays.

On the next stop in Seattle, Harold Johnson, W7PN, took me in hand, and saw me back to the hotel early. This was so that getting up at 4 AM for a six o'clock flight would be as painless as possible. Turned out the plane didn't leave 'til nine on account of fog. Oh well! My Butte, Montana dinner was complete with a serving of rattlesnake meat -- the stuff doesn't taste too bad until they tell you what it is! Following this, however, was a steak big enough to make anyone forget his troubles. Next morning, Butte county treasurer Jack Picard, W7JFR, took me on a royal tour of the mining installations in and around Butte, and for a peek at the Continental Divide.

The Salt Lake City group showed me a fine time too, and I wish I could have stayed there (and everywhere else) much longer. S.L.C. was the first place I ever used a $1000 hi-fi set for a projector stand! Following another nice stopover in Omaha, it was Chicago and the ARRL National Convention. Here, John Landoek, W9WOK, achieved his goal of making the v.h.f. doings a regular convention within a convention. In addition, the whole convention succeeded in having so many interesting things to do and see, that nobody could possibly cover all of them. I can't think of a better complaint to make than that!

Then -- home and back here to PRP Headquarters, carrying nearly one hundred newly filled out registration forms, and with more coming in every day. It was a wonderful trip. To all of you who helped make it so -- my very sincere thanks.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

MPS/hwh

This bulletin is published and distributed by The American Radio Relay League, Inc., West Hartford, Connecticut as a part of the performance of Contract No. AF19(604)-2171 with the Geophysics Research Directorate, Air Force Cambridge Research Center, Air Research and Development Command.

THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 11 NOVEMBER, 1957

IN THIS ISSUE:

ALL ABOUT THE YELLOWKNIFE ANTENNA SYSTEM

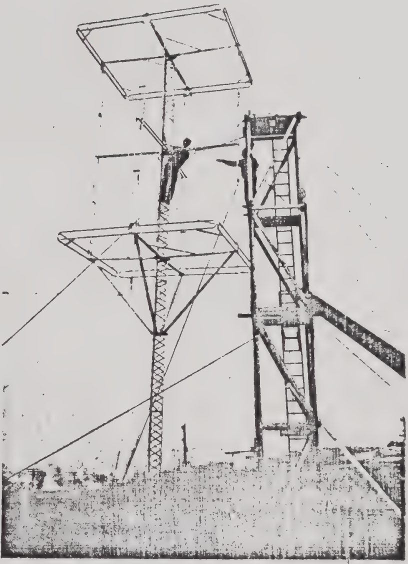
AUSTRALIA GETS SIX FOR THE I.G.Y.

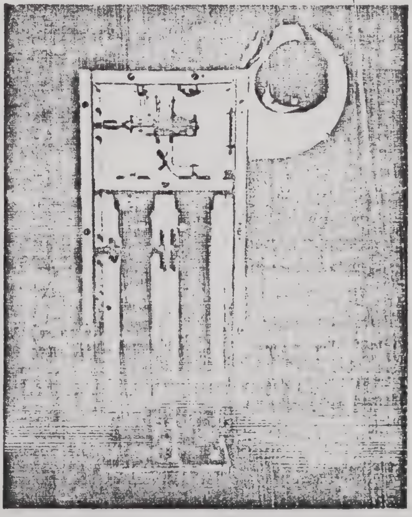
F2 BEGINS, T.E. CONTINUES

THE ANTENNAS AT YELLOWKNIFE

Of more than a little interest to PRPers, if mail and report notations are any judge, has been the 49.99-Mc. IGY installation at Yellowknife, N.W.T. These stations (there is also one on 38.07 Mc.) are operated by Canada's Defence Research Telecommunications Establishment, and were described in the "PRP News" for June. In addition to reception reports, we have received several requests for information about the double-stacked square loop antennas used at Yellowknife. Through the kindness of Mr. J. H. Crysdale of the Defence Research Board, we have obtained the excellent photo reproduced at the right, and also considerable data which should be of great help to anyone contemplating the construction of such an array. The following is from Mr. Crysdale's letter:

"The vertical spacing between the individual bays of each antenna is ap-





UPPER RIGHT: The 38.07-Mc. Yellowknife antenna while under construction at the Valeriote Electronic plant, Guelph, Ont. RIGHT: New p.p. 4X250B 144-Mc. amplifier at W1REZ, Fairfield, Conn. Aircraft clamps and home-made finger stock are used where plate lines meet tubes. End of chassis forms half of plate bypass. BELOW: Another Ray, W3TDF, of Langhorne, Penn., caught in a relaxing mood.

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proximately 0.7 wavelengths. The two folded dipoles on each side are joined with a 300-ohm transmission line. There are four such lines for each antenna, and they are joined together from their centers by horizontal 150-ohm transmission lines which are connected in parallel at the geometrical center of the antenna. For 300-ohm folded dipoles, and assuming no interaction between the elements, the input impedance at the junction of the horizontal feeders would be 37 1/2 ohms balanced. The feeders and the folded dipoles are made of 3/4-inch aluminum tubing; the supports and spacers are constructed of a glass fiber material.

"RG-17 A/U coaxial cable (50 ohms characteristic impedance) provides the connection from each transmitter to its associated square loop antenna. The lengths of these cables are approximately 200 feet at each frequency. Unbalanced-to-balanced transformation and matching at the antenna are achived with a 1 to 4 balun and an open line transformer. The open line transformer consists of a 200-ohm line one wavelength long, the junction of the horizontal feeders being connected to one end, the balun connected at a variable distance from this end, and a movable short still farther along the line. The entire assembly is bolted to the side of the tower. By adjusting the positions of the balun and the short, very close matching was possible. With the assistance of Smith charts, each antenna was adjusted in a period of one hour so that with 750 watts into the RG-17 A/U transmission line, only 5 watts was reflected.

"With the antenna matched, the impedance at the balanced terminals of the balun is approximately 200 ohms. The balun itself is simply a half-wavelength of coaxial cable, the ends of the center conductor being the terminals with one end joined to the center conductor of the transmission line to the transmitter. All exposed coaxial joints and cable ends were covered with silicon cement and taped. The antennas were installed during October of 1956 and to date there has been no deterioration."

We hope that you found this material of interest, and heartily recommend the antenna design for any installation requiring a good omnidirectional array with horizontal polarization.

THREE NEW OPPORTUNITIES ON SIX

VKs Get 50 Mc.

Bob, VK4NG, our TE pioneer from Australia sends us the good news this month that VK amateurs will be permitted to operate between 50 and 56 Mc. for the duration of the IGY. If during this period, the band is required for some other service, then one month's notice will be given. VK4NG, himself, is now in business with 50 watts to an 807 and four-element beam working the JAs via TE and F2. His frequency is 50.24 Mc.

VS6CJ To Be On Soon

More good news -- this time from Hong Kong. George, VS6CJ, reports that it won't be long before he has the Handbook 2E26 rig perking on six. It seems that friend VS6BE, who himself is getting interested in v.h.f., came through with a spare 2E26. George has been doing very well with the Japanese stations, despite a rather difficult manual antenna rotating setup, and his 15-25 watts A1 ought to do all right.

News From India

One of the more interesting letters received this month requesting info on PRP came from VU2EJ of Poona, India. He reports authorization to work on all amateur bands up to 144 Mc., the power allowed being 100 watts up to 28 Mc. and 25 watts on 50 and 144. We certainly hope VU2EJ takes advantage of those six-meter watts; India is in a pretty sparse part of the world, v.h.f.-wise!

PROPAGATION NEWS

by Constance Campbell, W1CIE

TE and Aurora Vie for Attention on 50 Mc.

The last half of September found many stations active with auroral work. Best days seemed to be around the 21st and 22nd, and this period was characterized by morning openings. Many of the southern and northwestern states got in on the fun this time as the openings covered more ground than usual.

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50 Mc. 329

On September 22nd at 2220 MST, W7ACD in Shelley, Idaho heard W5NSJ, in Albuquerque, New Mexico, via aurora; W7VPT, Vancouver, Wash., was coming in at K6GOX about the same time. W8MAH caught one of those morning openings on the 22nd. At 0915 EST he was receiving signals from W8s, 9s, and 0s.

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The 29th of September was no laggard when it came to supplying some aurora, however. K2ITP reports concerning the 29th: "This was the longest aurora I remember - it was going continuously from 0900 to 2040 or so! Daytime at that!" W1LGE, W1SUZ, W2BVJ, and K2CEH, among others, submitted reports listing morning contacts. Luckily, the 29th was a Sunday and work didn't interfere with ham radio.

303

TE reports came rolling in from all parts of the world. W5EXZ worked CE3QG and heard CE3CC at 2000 CST on the 20th. On the 27th, LU5CK's signal was received by K5ABW and W5FXN about 2030. W4GJO had QSOs with LU9AT, LU3EX, and LU4DFN during late evening of the 25th, and again on the evening of the 27th worked CE3TB, CE3BM, and CE3QG. CX1AQ sent in TE reports for practically every evening during this period and said that the band seemed to reach a TE maximum on the night of the 26th. 260 271

IU7AT sent us some examples of Transatlantic TE work. CT3AE in the Madeira Islands was coming through at his location on many nights. Crossband contacts produced many TE reports for us, also. ZC4IP, Cyprus, and ZE2JV, Southern Rhodesia, worked (28/50 Mc.) between 1700 and 1800 GMT on many evenings during the second half of September. VQ2PL got in some TE work by means of crossband contacts with MP4BBL and ZC4IP.

2 Meter Activity

W3GKP wrote to us about 144 Mc. activity during September. "During times when aurora was heard (on the 21st and 22nd) stations were coming through from New England across through Ontario to Michigan, Indiana, Illinois and sometimes as far south as North Carolina." After 2300 EST on the 22nd, he received auroral sigs from Alabama, South Carolina, and Arkansas!

Geoff. Stone, G3FZL, R.S.G.B. IGY Project Coordinator, sent us info about auroral conditions in G-land. On September 23rd, 1400 to 1500 GMT, G5BD worked GM3DIQ and heard PA0FB and DL1LB. On the 22nd, Scotland's hams were heard in London and Surrey, and strong auroral echoes were noticed on local signals.

F2 Gets Into the Game

266

October brought in the east-west F2 season with reports of an opening as early as October 3rd reaching our desk. K8AHX near Kalamazoo, Michigan, heard an S5 signal from FF8AC at 1002 EST. K8CIC heard this same station on the same day about 1118 and gave him a signal report of S6.

From W6BJI comes the news that he worked VE1EF and W1QCC/VE1, up in Pictou, N.S., on the 20th between 0908 and 0928 PST.

305

The arrival of the F2 was good news indeed and saved the first half of October from complete oblivion, propagation-wise. Aurora and Sporadic-E openings were few and far between. However, your negative reports were received happily as a sign that Sputnik-listening did not lure you away from v.h.f.

W1HUN noticed a short Sporadic-E opening on the 7th of October around 2100 EDST. He heard K4DLA and K4BLA, and worked K4JDD. On the next night, W0s were coming in at his location for a short while.

The west coast was the scene of a slight Sporadic-E opening on the 7th. W6BJI in Fresno worked W7TWX and W7MKW around 2050 PST.

October 13th seemed to be a good night for auroral work on 144 Mc. VE2FF heard W1HFU, W2NCF, W4AO, and W2BLV via aurora at 2000 to 2030 EDST.

PRP AND SPUTNIK

Easily the outstanding event of the past month, of course, was the launching of the world's first artifical earth satellite by the Soviet Union. Few PRP observers,

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IGY researchers in their field just as the men of the U.S. Project Vanguard or the Russians who built Sputnik are in theirs, will dispute this. In fact, many of our PRPers, along with their h.f. ham brethern, wasted no time in providing valuable data about the little "red moon".

During the first few days of satellite life, amateur reports were extremely valuable to the Vanguard Control Center at the Naval Research Laboratory in making rough orbit calculations. These helped aim the hurriedly modified optical and radio "big guns" of the professional scientists -- the instruments which could accurately plot the sphere's path.

After the NRL announced no further need for ham observations, both the ARRL and PRP offices were deluged with all sorts of data about Sputnik. We received lists of times, tape recordings, paper strip recordings, etc., etc. To those of you who sent them in, we thank you. To those of you who have such material, however, we ask that you hang on to it for the present, and do not send it to ARRL or PRP. The reason for this is that the League is looking around for some agency willing to collect and study such reports as hams have and could supply. If we find such an agency, QST and the PRP News will tell you where to send your material.

For information about what observations are likely to be useful, we refer you to the satellite article in QST for November, 1957. This issue also winds up the Minitrack Mark II series, for those interested in a rather more ambitious venture. December QST will describe a cost-cutting modification of the writer's November, 1956 108-Mc. converter, which may be of interest to those who want to be ready for the American moons coming up during the next few months.

LATEST EDITIONS TO OUR REPORTING HONOR ROLL

A check through our record file shows that the following stations qualified for their PRP Consistent Reporting Award certificates during the month of October. Congratulations to:

W1MEG
W1CAX
W2HF/2
W3TIF
W4CSN
K4HTO
W4INM
K4KYS
K4KZF
K5HTH
W6DNG
W6FKO
K6TYW
W7FYC/
W7FYG
W8LOF
W9BQC
K9EID
W9SFU
W0TGC
VS6CJ

As for the endorsement stickers, they have arrived, and as soon as we can get hold of suitable date stamps, etc., a lot of quite attractive little stamps will be on their way to those observers who have earned them.

295

FLASH! 50 MC. OPENS ACROSS THE ATLANTIC!

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Another page of v.h.f. history has been written. This past Saturday and Sunday, October 26 and 27, saw the North Atlantic M.U.F. finally do what all six meter men have been eagerly awaiting all summer and fall -- top the 50 Mc. mark. When it happened, amateurs in Sweden and Norway lost no time in making use of their new band. Honors for the first two-way on six go to SM5CHH (50.2 Mc.) and W4UMF -- both fellows PRP observers.

Things were popping also on the following morning, when W1HDQ reports working LA9T (50.17 Mc.). Ed observed at least nine British stations trying for crossband 28/50 contacts, and made what he believes to have been the first one. G-stations seem to have worked into W1, 2, 3, 4, and 8 via the crossband mode.

Also on Sunday morning, PA0FM in the Netherlands was hearing W1HDQ and others, and trying for 28/50 contacts. He had no luck, however. We have a second hand report that EI2W took advantage of his recent 50 Mc. authorization, and had a two-way with W8CMS.

During the past few months, the charts and predictions have been anything but encouraging about 50 Mc. F2 possibilities for the winter. Last weekend, however, the F layer clearly showed that it hadn't been reading the predictions, and W1HDQ observed signs of an opening as early as 0642 EST Sunday morning -- that's 20 minutes earlier than ever before. So, here we go again!

[Nov 57]

REGULAR WORLD DAY CALENDAR

November 14, 1957	December 13, 1957
21	16
22	21
	22

Remember that it is especially important to be as active as possible on these days so that our PRP data can best be used with that of other IGY programs.

MORE BEACONS AND SUCH

Seems like every PRP News issue contains a few more stations making regular, beacon-type transmissions. We hope soon to get around to summarizing the ones actually in operation, for we realize as well as those of you who have reminded us about it that a list spread out among the past several months isn't too helpful. You observers can be a big help in making (and keeping) such a list accurate by letting us know what you hear along these lines. And here's a note to those of you making beacon transmissions -- putting those transmissions on the air is only half the job so far as PRP results go. The second (but just as important though easier) half is to let us know about them. By this I mean not only about their existence, but just what days they were on and what days they were off (none of us is perfect). This can best be done by listing the "on" times on regular PRP report form. PS: Such a report form counts toward a certificate and stickers, too!

KA2XAX Back On

John Dinter, now K0JJA of the Collins Radio Company, informs us that KA2XAX has returned to the Cedar Rapids, Iowa scene. John reports: The operating schedule will be shared with KA2XCQ on 38.48 Mc. KA2XAX will be on 49.6 Mc. The scheduling is not complete as yet; neither do we know for what period. At present we are operating mostly during the daytime with XX00 to XX30 hours 38.48 and XX30 to YY00 hours 49.6 Mc. Transmitter power is 20 kw. with an antenna gain of about 20 Db."

W1REZ's CORRECT FREQUENCY

The schedule printed last month for beacon transmissions from W1REZ, Fairfield, Conn. was correct enough, but we were behind the times on his frequency. For the past few months this has been 144.106 Mc. instead of 144.160 as quoted. However, Ray was good enough to move up to 144.167 around the middle of October to match what we said about him!

Hawaiian Islands Transmissions To Begin Soon

K6TYW, on a recent visit to Hawaii, was successful in talking Lee, KH6BRJ, into setting up a beacon station. This will be a BC-640 running about 100 watts to a ground plane. Operating hours are to be 0800 to 1700 HST which is five hours behind EST. Transmissions on 50.223 Mc. have probably already begun, although we lack confirmation at this writing.

LU5CK Now Running A Beacon

Ed, LU5CK, of Buenos Aires, Argentina writes that he has been operating a 90 watt beacon on 50.1 Mc. since September 1st. Transmissions are c.w. at 10 w.p.m. and are as follows: BEACON LU5CK (long dash). Weekday hours are from 1600 to 1630 GMT. On Saturdays and Sundays the schedule is from 1200 to 2100 GMT, and in addition, the other days are covered between 2300 and 0300 when this is possible. GMT, you will recall, is five hours ahead of Eastern Standard.

NEWS AND NOTES

Area Code For Experimental Calls

PRP News No. 9 went briefly into how the calls assigned to experimental stations are derived: First the letter K, then a letter designating the radio district, then the numeral 2 and the letter X, and finally a group of not more than two letters indentifying the particular station. Observer Gordon Simkin, W6KUH, points out that we neglected to mention the code used for the radio districts (there was good reason -- we didn't know it) and comes through with the following:

"Mention was made that experimental stations use K_2X__ in which the second letter designates the area, but this area code wasn't given. It seems to be thus:

[Nov 57]

A -- W0 area
C -- W1 area
E -- W2 area
G -- W3 area
I -- W4 area
K -- W5 area
M -- W6 area
O -- W7 area
Q -- W8 area
S -- W9 area
U -- KH6 area
W -- KL7 area

"Other U.S. possessions are no doubt codes too, but I don't know them. This also follows for most other stations (common carrier, police, etc.) with three letters and three numbers, i.e.: KIF651 is W4 area, KCC266 is W1 area, KUA217 is KH6 area, etc."

Keep this table handy; maybe it'll help you locate a station someday.

Making Use Of The One-Eyed Monster

The following good hint is from Cal Graf, W5LFM, of San Antonio, Texas: "Six meter openings have been anticipated by as much as one hour by listening to ionospheric scatter and meteor return signals of channel 2 video. All channel 2 video carriers within 1200 miles can be received by ionospheric scatter and meteor return. When iono. scatter signal increases due to sporadic-E, cloud can be located by beam rotation. Six is then monitored for possible opening."

CT1CO All Set With Tubes And Rotor

We're glad to report this month that our previous pleas in the name of CT1CO (PRP News Nos. 6 and 8) fell not upon deaf ears. First, a kindly Californian who prefers to remain unidentified shipped off his spare antenna to Manuel. Then PRP observer KP4ABN wrote in offering two 4E27 tubes as a gift. Just recently heard from was Rick, W3OJU, who reports that he too sent a pair of 4E27s to Madiera. So -- it looks like CT1CO is all set. We'll certainly hope to hear him coming through on six one of these days. When he does, and you work him, be sure and say a little thank you to those fellows who made it possible.

No Need To Report Nothing To Report

In closing this month, just a word to those fellows who have been sending in reporting forms which say, in effect "nothing to report this month". We figure that such reports mean either of two things: First, it might mean that the observer did a normal amount of operating, but just didn't catch any DX. If this is the case, he should be making out negative reports -- listing the dates and times when he was on with nil results. Or, "nothing to report" might mean that things in general kept this chap away from his v.h.f. rig for the whole reporting period. In this case, frankly, why report it? It isn't so much that we mind your using up our forms in this way, but it costs you postage and both of us time. As far as certificate credit goes, we're afraid that such reports just don't count.

Have a swell time with the F2 and TE, and all the new countries, and we'll be seeing you next month.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE ARRL PRP IGY NEWS

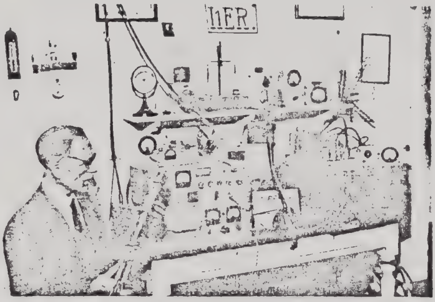
MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 12 DECEMBER, 1957

SPECIAL ANNIVERSARY ISSUE!

50 MC. OPERATION AUTHORIZED IN NEW ZEALAND

CYPRUS-AFRICA T.E.--A PROGRESS REPORT



ABOVE: Some of the station equipment at I1ER, Milan, Italy. The piece of gear held by Mario is a 430 Mc. coax line amplifier. On the table are an exciter and 829 amplifier for 144 Mc., a 144 Mc. converter from QST, and an AR-88 receiver. Items on the shelf and the wall include various bridges and wavemeters, weather instruments, and a 1250 Mc. corner reflector.

ZLs GET SIX

Just a few days too late for inclusion in last month's "NEWS" came the good word that, as of Nov. 1, '57, New Zealand amateurs are permitted to operate in the ranges 50-52.35 and 52.65-54 Mc. for the duration of the IGY. The break at 50.5 is for an experimental scatter station. Also, amateurs who apply and are considered qualified will be given permission to use power up to 1 kw. on the 144 Mc. band. This information from ZL2ACB.

K6RNQ sent in the same news a few days later, and reported that at least three ZLs, namely ZL1ABL, ZL1ADP, and ZL1MO, are on six at the present time. Incidentally, Bob is discontinuing his five-meter listening, and wants to know if anyone is interested in a 54-60 Mc. converter and beam real cheap.

BELOW LEFT: Paul Gerstl, SM5CHH, at the controls of his Stockholm, Sweden, station. Crystal-controlled converters and rigs running 50 and 30 watts output are used on 50 and 144 Mc., respectively. Paul does most of his DX operating on Saturdays and Sundays since he has to be at work on weekdays during the hours of best conditions. These are usually about 1400-1600 GMT (0900-1100 EST).

BELOW RIGHT: Operating position at the efficient looking station of Ingvar Pettersson, SM7ZN, located in Vaernamo, Sweden. The rig uses two 807s in push-pull, running 100 watts A1 or A3. Antenna is a Vee-beam measuring 83.25 wavelengths on a leg and directed at the U.S.A. As Ingvar says, "The band is open between 1500-1700 GMT one or two days a week, so please turn the beams to Sweden this time!"

[Dec 57]

PROPAGATION REVIEW

by Constance Campbell, W1CIE

Two Meters During October and November

Although PRPers monitored this band almost constantly from October 15th to November 15th, their rigs didn't get much of a workout until the nights of October 20th and 21st and November 6th. Aurora was a-plenty on those evenings but the remainder of these periods drew a blank. W9EGH, Goshen, Indiana, was among those who caught the openings on the 20th and 21st. He heard W8KAY and W4AO and worked W2OPQ, VE3HW, and K2GQI. On November 6th, W2SMX reported hearing W1REZ, W3LZD, W1AJR, W2BLV, W4HJQ, and W3PMG, between 1836 and 2030 EST. He also got in a bit of auroral work on November 8th.

W1RFU, Wilbraham, Mass., was quite enthusiastic about the following contact. After six months of meteor scatter skeds with W4LTU, he finally managed a QSO. He gave Walt in Orlando, Florida, a 5S3 signal report and counted this QSO as six months' work well done.

While On Six

So much happened on six meters from October 15th to November 15th that we are going to break it down and consider only the second half of October for the time being.

The band really opened wide for F2 layer work during this period and transatlantic QSOs were in abundance. K2ITP worked SM5CHH on the 26th at 1140 EST. This Swedish station was also heard by W3OJU at approximately the same time. An hour eariler, at 1038 EST, W3VAM worked G4LX (crossband). 268

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On the 27th, W1HDQ worked G3COJ at 0740 EST! Later in the morning, he had QSOs with G3FIJ and SM5CHH. At 0910, W1ELP worked LA9T, and received signals from EI2W a few minutes later. PA0FM in Holland, and FF8AP in Africa had QSOs with W4UCH at 1035 EST. This was some morning! From 0845 to 1035 EST, W8CMS was busy working G3FIJ, G3FOJ, G3XC, and EI2W.

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Over on the opposite coast, W7MKW reported working JA2GR on the 31st at 1425 PST. He wrote that this was the "first JA contact for me this fall - been monitoring for 'em a month!"

The 20th and 30th were good days for transcontinental F2 work. W6GCG heard W1HOY and W1DEI, and worked W1FOS on the 20th at 0912 PST. On the 30th, W6AJF worked W1FCP, K2CBA, W1DYQ, W2LCB between 0830 and 0930 PST. 305 347

There was still some Sporadic-E floating around, as witness the report from K0CLJ. On October 17th at 1930 MST he received signals from W6CDT, K6UDX, K6LRQ, K6LEY. K0GQG in Osseo, Minnesota, worked W4UUF and K4PIQ on the 19th around 2140 CST.

TE was still in style, too. JA2GR heard VK4NG in Queensland, Australia, on many October nights around 2000 JA-time. From VK4NG came confirmation of these TE contacts. He worked numerous JA stations on the nights of October 16th through the 25th.

Down to the south, LU3EX continued his TE contacts with CT3AE. They QSOed on the 16th of October at 2115 LU-time, and this was duplicated many times during the remainder of the month.

From VQ2PL in Northern Rhodesia came the report of his contact with 4X4IX in Isreal, his first QSO with this country. It took place on the 28th at 1855 GMT.

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November was ushered into the PRP office by a telephone call from W3CJU on Nov. 1 who informed us that the band was open to Ireland that morning. November 2nd was a good morning for the eastern half of the U. S. An opening to Norway was quite widespread with a west coast opening appearing during later hours. W9DSP, Chippewa Falls, Wisconsin, worked G3COJ, G3IUD, G4LX, and EI2W on the 2nd, between 0925 and 1010 CST. He wrote us concerning his QSO with Ireland: "My first transatlantic QSO both ways! Also (I was) the first Wisconsin station for all of the above stations. The remainder of the month's activity could not possibly duplicate the thrill of November 2, 1957!" However, we imagine that November 16th was quite important to him, too. At 1205 he worked ZE1JN and ZE2JV. From 1500 to 1600, he worked KL7CDS, KL7CDE, among others. Around 1700, Japan was coming through to him in the form of QSOs with JA8FY and JA2FR!

(Continued on page 4)

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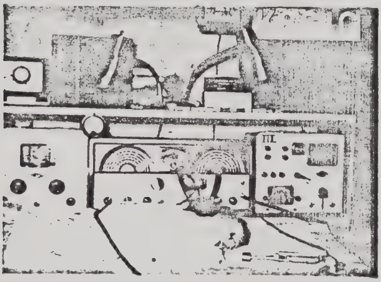
[Dec 57]

SPITSBERGEN ON SIX

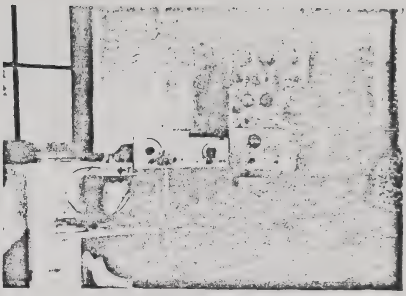
One of the month's most interesting news items was sent in by Karl-Eric Nord, SM5MN, the V.H.F. Manager of SSA. He reports that a Swedish station is working regularly from Spitsbergen on 50.03 Mc. with the call SM5AQT/LA/P. It has been organized and equipped by the SSA, and is operated by SM5AQT, who is radio operator of an IGY expedition.

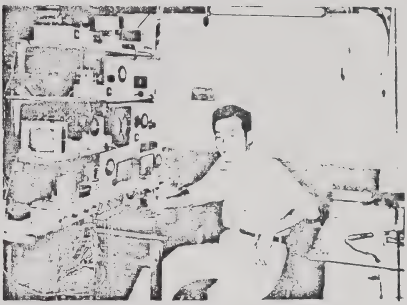
Great difficulties were overcome to set up this station, largely as a result of the wholehearted efforts made by one man: SM5KV, who is known to DXers all over the world for his work from Spitsbergen one year ago.

Of special interest is that Spitsbergen is north of the auroral zone, and stations will be worked through the auroral curtain.

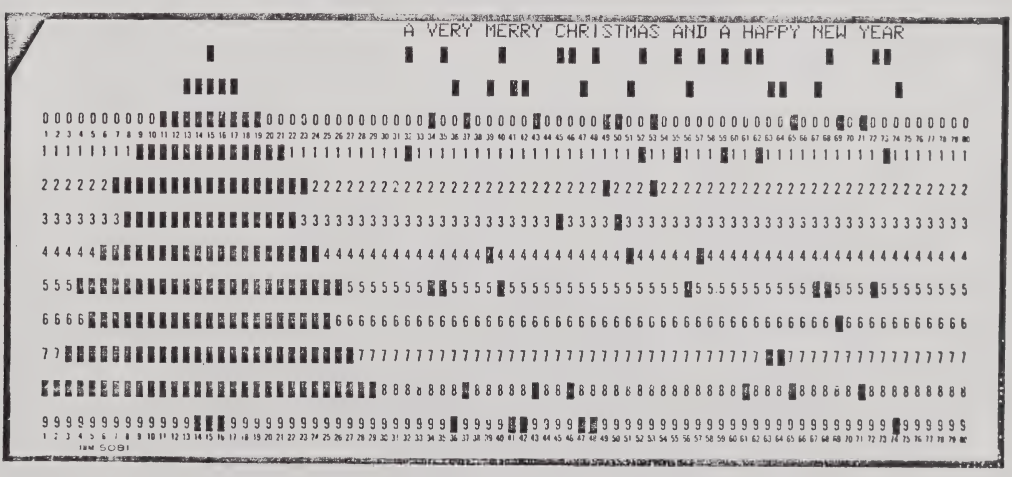


ABOVE: New op at K8CIC, Jeffery Allen Kahlo, getting his first taste of ham radio at age 3 weeks.





TOP: Tadaoki Itakura, JA8BU, of Sapporo, Hokkaido, Japan, shown at his station. 30 watts from an 829B feed a 4-element yagi array. Tadaoki has worked stations in KL7, W7, W9, and W0. His ambition is to work the U.S.A.'s east coast. CENTER: Iwao Ino, JA2KB, and the equipment which he shares with his brother Osamu, JA2ID. All gear is homebuilt by the two, and includes a 50-watt 829B transmitter and a double-conversion superhet receiver. Location is Shizuoka-City, Japan.



A VERY MERRY CHRISTMAS AND A HAPPY NEW YEAR

HAPPY HOLIDAYS! Just couldn't resist the urge to make use of our punch card machine in wishing you and yours all the best of season's greetings from the PRP staff --

Jane Hazel Mason W1VLH Connie W1CIE

[Dec 57]

238 242 241

Special bulletins were received from Herb, K8CIC, calling our attention to his contacts with KL7CDT (50.100 MC) on November 4th, 5th, and 6th. K5HTH, Amarillo, Texas, noted, "6 meters busted wide open today, November 4th. KL7CDT was coming in along with VE1HT and W1QCC/VE1. Heard W7ACD and W5VY via backscatter. Last but not least, caught an E opening with W6BAZ and W6OXF. All I can say is 'Wow'!" All this propagation was between 0805 and 1045 CST.

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On November 12th at 1133 MST, W7ILL worked ZS3G, South West Africa. ZS3G's signals were received S9 in Big Piney, Wyoming, and he was heard again at that location on the 13th. 253

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At 1617-1629 GMT on November 4th, G2BVN heard sigs from W7RUX and W6ABN. He also worked W6NLZ. From him comes the observation, "The reception and crossband QSOs of ... with W6 and W7 are believed to be amongst the first, if not the first, on 6 meters."

There was a liberal sprinkling of backscatter during this period, to add spice to all these long haul skips. W4RMU, W1CLS, W3VAM, W4HVV, were all heard by VE3AET on November 2nd at 0815-0855 EST. His antenna heading was 45°.

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EUROPE TO AFRICA T.E. -- A PROGRESS REPORT

With the end of the fall transequatorial scatter season presumably upon us, this should be a good time for reviewing what has happened in the field. One outstanding new development of the past few months has been the extremely regular TE work between southern Africa and the south of Europe. This has been the result of efforts by quite a few stations, but we have picked out three fellows in particular to feature in this report. We're sure that their comments will be of interest not only to other hams involved with TE, but to all hams interested in new modes of propagation.

From ZE2JV:

Ray Cracknell, ZE2JV, of Salisbury, Southern Rhodesia, hasn't stopped at just working a lot of TE; he's been thinking a lot about it, too, and here are some remarks from his letter of October 16: "For six weeks the 4000-mile Cyprus-Salisbury hop on 6/10 crossband has been consistent from 7 pm. onward every night (three failures were probably due to human factor, not conditions).... When F9BG, Toulon, France, has been available to test, 28 and 50 have seldom if ever been open together.... There are undoubtedly three modes of propagation:

a) F-layer two hop. Only worked on 28; unlikely on 50 as yet. Closes sunset plus 20 minutes every night.
b) TE as described by Dr. Villard (see PRP News No.4). Starts only as F2 hop closes except when heavy E layer is about, when start is delayed until that closes. This lasts till about 9 pm. but sometimes lasts longer. Average time getting later as sun comes south.
c) Some other reflecting medium. This medium gives an MUF rising up to 75 Mc. at 9:30 p.m. local time with terrific flutter fading. It is sometimes possible to recognize that there is AM speech or music on a regular 72 Mc. harmonic, but the modulation is absolutely unreadable. This signal lasts for about 10 minutes every evening, 9:25 to 9:35 pm. Baghdad on 60 Mc. is very strong and regular by this medium. Long duplex 28/50 phone QSOs with sigs S8-9 each way have been possible almost any night with ZC4IP via this mode of propagation. If the "Bowler hat" F layer described by Dr. Villard stays up late, then this mode does not start until it closes.

A series of 72-Mc. tests with F9BG will start any day now. We're both erecting beams for this band."

A week or so later, Ray sent us the graphs reproduced in the figure on page 5. Both of these show typical signal levels plotted against local evening time. The top graph shows what happens on a "normal" night, the bottom one portrays "abnormal" conditions. Here's what Ray had to say about them: Abnormal nights (four this month) seem to correspond with heavy E layer ionization and or strong aurora. Normal nights have characteristic flutter from 7 pm. onwards. Abnormal nights the signals are very steady with no flutter until after 9 pm. We promise to stay up one night to see what happens!

"The fantastic thing is the regularity of this TE channel. It's better than a telephone line -- elephants can push that down!"

From ZC4IP:

Mentioned above was George Barrett, ZC4IP, of Limassol, Cyprus. George has played an extremely important role in these TE experiments, since he was, for some time, the

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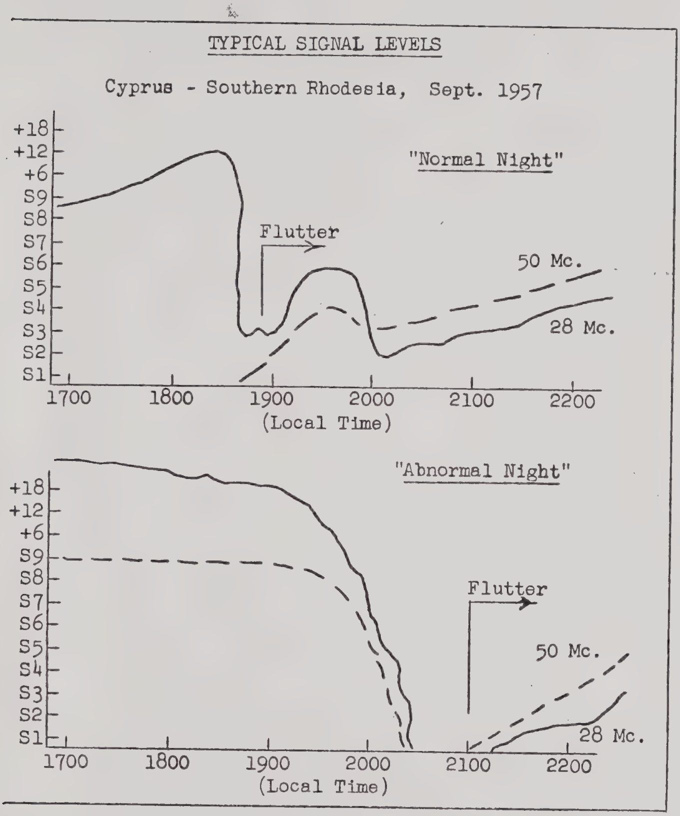
northern end of nearly all such circuits. Here are some of his comments: "While reading the report for the 1st-15th of September, you should bear in mind that this was a period of development. Various snags were sorted out on the receiving equipment, and the aerial developed from a dipole to a quad beam. Also, both I and the fellows at the other end of the circuit were getting used to the feel of the band. One important thing is that we now know that if signals fade out at around 1645 GMT, we only have to hang around for a while and the band will reopen on TE. We have also learnt that TE will tend to peak at around 1700-1800 GMT. We still do not know when the band closes, and we are hoping to arrange with our wives to do an all-night session to see what happens.

"As the skeds became more well known -- particularly by the South Africans listening to my 28 Mc. transmissions on which they can frequently hear both sides of our duplex QSOs -- so more people have tried to get through at the critical times on 50 Mc. Also with my reports as a yardstick, the Africans are busy improving their gear. ZE1JN's transmissions have improved out of all recognition. ZE2JK has been brought back onto the band. ZS3G has fitted a morse key to his rig and is busy building a bigger and better beam. ZE2JV is now equipped for duplex working. Others are busy building transmitters and/or converters."

TYPICAL SIGNAL LEVELS

Cyprus - Southern Rhodesia, Sept. 1957



George goes on to provide these excellent definitions of TE and F -- at least definitions of how we want them to be labled on PRP forms: "With regard to the 'Propagation Column', I am taking a shot in the dark when I label the entries F and TE. What I mean by this is that I call an entry TE when the signal carries a very rapid flutter which makes modulation difficult or impossible to copy, but the mean carrier level remains constant or varies at a very slow and almost imperceptible rate. Only north-south paths seem to carry this effect and only at night. Usually no other signals can be heard other than a weak F-type path to South America on 28 Mc. and occasional sporadic-E to Europe also on 28 Mc. 'F' is applied to signals which have no flutter. Modulated signals are easy to copy and will run from peak to noise level and back again in a matter of seconds; in other words, fading is of the 'normal' kind one hears on the lower frequencies." Only thing we can add to this is to be sure and make use of an "F" (for flutter) in the "Qual" column when this is present on TE signals.

From F9BG:

Jean Garat, F9BG, of Toulon, France is another fellow who has been on the northern end of a lot of TE crossband contacts. He has long been working ZE2JV on 28 Mc., but "crossband contacts 6/10 have been comparatively few and difficult, owing to the fact that 28 Mc. usually closed about ten to fifteen minutes before 50 Mc. opened. This was around 1630 to 1645 GMT." Jean goes on to report his first F2 reception of U.S. six meter stations, namely W1HDQ on October 31, and W1HDQ and W1GKE on November 1. He continues: "It seems conditions on six are following those on ten, as, with the coming of Ws conditions to South Africa seem to deteriorate. I have not heard any ZE/ZS signal for about ten days."

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"OPERATION SOLAR DISTURBANCES"

One happening which certainly livened up the past month was a brief note concerning PRP which appeared in several magazines distributed to schools. These included "The Weekly Reader","Junior Scholastic", and "Senior Scholastic". The article told in a very general way what we are up to, and said "for full information, write: Mason P. Southworth," etc.

This had the effect of bringing in literally hundreds of requests for "full information about IGY and solar disburbances". Now that covers quite a bit of territory! One young fellow apparently suspected as much for he said that if we couldn't supply this information, than please "let me know who can and where he is at".

All in all, the requests revealed a tremendous amount of scientific interest among the younger generation, and showed that they are really thinking seriously about the problems facing the world. One young lady, Miss Diana Hodak of Austin, Minnesota, in replying to our form letter answer said that she was sorry not to be able to participate in our project, but certainly did want to do something in science later in life. She concluded with: "One other thing I wish to tell you is about the satellites, rockets, submarines, and so on, and how much they cost. Why doesn't someone take away all the quiz programs where so much money is given away, and put it to good use like our future satellites?" Not a bad idea, what?

TV VIA TE

Most of us have been thinking about transequatorial scatter propagation as a phenomenon noticed only by radio amateurs. Not so, reports PRP observer Gorden Simkin, W6KUH. Gordon recently took over the job of International DX Editor for the American Ionospheric Propagation Association, a society of TV DXers. Among the letters so far received was one from Rodolfo Marchado of San Martin, Mendoza, Argentina, who reports some rather consecutive TV reception which certainly sounds like our friend, TE. In the belief that six meter operators familiar with TE will be interested in how this mode acts on slightly higher frequencies, we quote the following passages from Mr. Marchado's letter:

"I receive here the signals of the following stations: Venezuela -- channels 2, 4, and 5; Brazil -- 3 and 5; Cuba -- 2; Puerto Rico -- 2; Mexico -- 2 and 4; and Guatemala -- 3. The good conditions for the reception starting about the first days of August and finish in the first days of December, and then start again in February and finish in May.

"The signals are very strong; sometimes is not necessary the antenna. The pictures are seldom clear. Generally they come in illegible, as if there were many signals that arrive with a difference of time, and then we see various repeated images, some out of place, like ghost images, especially when the signals are very strong. Generally the signals are clearest during the last minutes of reception when the signals are all but faded and don't last much longer.

"The first stations to be seen are Venezuela. By the end of August, I begin to see Brazil. During the month of September, I have received almost every day in the following form: At 2100 (Argentina time) Belo Horizontes (Brazil) channel 4 comes in very strong, but illegible pictures. Channel 3, Sao Paulo, Brazil, also come in the same way, until the transmissions end, about 2400. At this time, the signals clear up. Also at 2100, Venezuela channels 2, 4, and 5 come in also very strong, but illegible, giving the impression that the reception is being interfered with by some obstruction, especially on channel 2. When the Venezuelan transmissions end, around 0100, the signals of Mexico, channels 2 and 3, and Guatemala channel 3 show up. Usually the signals of Mexico are received with more clarity.

"I have looked for TV during all hours of the day, and only once have seen any in the morning from Venezuela, but with weak signals and short duration."

THIS MONTH'S CERTIFICATE WINNERS

We're pleased to announce that the fourteen stations listed below have all qualified for the PRP Consistent Reporting Award during the past month. Congratulations!

W1AHE
W2BVJ
W2COT
K2GQI
W2QNA
W2UTH
W4UCH
K6GK
K6GOX
W9GMK
W0HXY
W0MAQ
SWL14
ZS2Y

THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

NUMBER 13 JANUARY, 1958

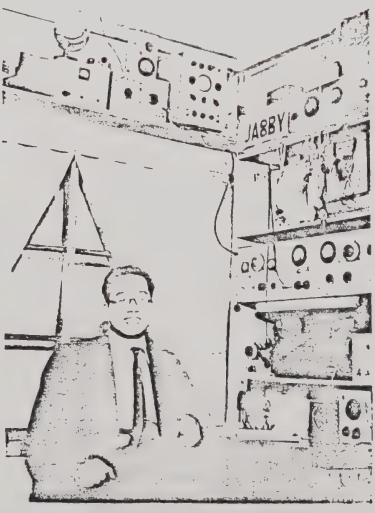
IN THIS ISSUE:

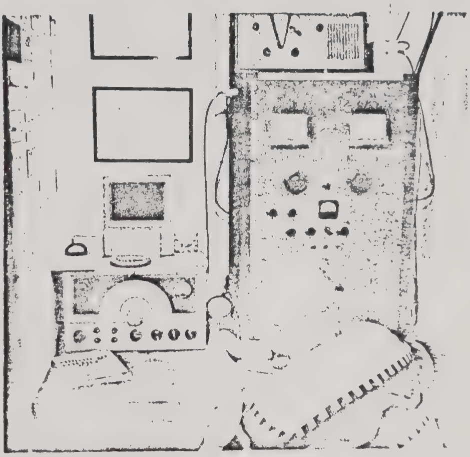
PROPAGATION RUNDOWN FOR THE PAST MONTH

A STATION LIST FOR CHECKING AND SKED PURPOSES

RIGHT: Doug Welsher, W7HWO, at his Benson, Arizona operating position. That nice-looking rack at the right contains the 50-Mc. transmitter; to the left is Doug's new RME 4350. A new Junior Op. is keeping the Welsher family pretty busy, but Doug can usually be found on 50.24 Mc. each evening from 1900 to 2200 MST. Look for him also on Saturdays and Sundays between 0800 and 1200.

BELOW: The smiling face and neat-looking station of Teruzi Aizawa, JA8BY, of Hokkaido, Japan. Six-meter gear consists of an 832-A transmitter running 25 watts, a converter-BC-312 receiving setup, and a three-element yagi. JA8BY claims the first 50-Mc. AJD (all ten Japanese call areas) and the first 50-Mc. JCC (working 100 Japanese cities). His WAJA count stands at 40 of the 46 prefectures. For more information on these JARL awards, see W1HDQ's column in QST for February, 1957.





BELOW: "CQ CQ CQ DE CT1CO ..." Here's the keyer responsible for that tantalizing 50-Mc. call which has been crossing the Atlantic so many mornings of late. The unit is a worldly one as the following list of ingredients will testify: frame - cigar box from Cuba, geared motor - from Germany, drum - jam can from Brazil, power transformer - from the Netherlands, rectifier and filter capacitors - from the United States, jack and paper tape - from Great Britain, elbow grease - by CT1CO. Manuel's transmitter is shown in the background. Exciter portion went on the air December 1, and the amplifier will be on shortly thanks to the generous hams who supplied CT1CO with tubes and other components.

WHAT'S NEW ON THE BANDS
by Constance Campbell, W1CIE

2-Meter Activity

Auroral openings on 144 Mc. seem to have been confined to November 26th and 30th and December 1st and 10th. W1REZ's beacon and manual transmissions really paid off during these times. Some of the stations who listed his call on their reports were: W1JSM, W1MMN, W2BLV, W2ORI, W3GKP, W8BAX, and W9KLR. Your reports show that quite a few of you used his signal as an indication of the presence (or absence) of aurora.

On November 26th, W0SMJ in Indianola, Iowa, heard W4HHK in Tennessee, W4HJQ in Kentucky, W8EHW, W8WXV and W8KAY. These aurora signals were coming in between 2020 and 2120 CST with a NNE antenna heading. Earlier the same evening, VE2FF copied W1IZY and W8DX with antenna NNW. On the 30th he heard W8RMH, W8GNN, W8DX, and W1AZK. Also on the 30th, W3PMG was hearing W8RMH, W9UCH, and W1AZK at 2300 EST.

Daily "I" skeds continued between W3GKP and W4LTL with very favorable results. Some reception was reported almost every day during the last half of November.

W9AAG, Woodhull, Illinois, had some terse comments about the condition of two meters during these two periods: "Whazzamatter with these peanut-sized auroras? Has ole Sol gone on a strike? Mebbe we will get a doozy for Xmas." That pretty well sums up the whole situation!

November Six-Meter Doings

1957

There was plenty of activity on six meters, however. Transatlantic, transcontinental and transpacific DX were worked in plenteous quantities. Here's what W2LWI had to say: "Observations on 50 Mc. for November 27th indicate that this was an unusual day propagation-wise. From 0958 to 1145, backscatter from the southeast was very widespread. Stations were heard from New England to Florida via this path. In P.M. from 1420 to 1450, the ZEs and VQs were in with signals peaking strongly. Had the good fortune to work ZE2JV and VQ2PL. In the evening aurora was observed from 2145 to 2210; W2s only were heard. Aurora had been worked on previous evening, also. Altogether was quite a day!"

W1CSG heard HB9QQ and DL7FU on the 30th between 1003 and 1038 EST. Earlier in the month, W1IGE copied SM7ZN and SM6BTT, and caught signals from W4UCH on backscatter. This took place on the 20th around 0900 EST.

W4KZF had a profitable day on the 21st. Utilizing some of that reliable F-layer, he worked SM7ZN and SM6BTT around 0900 EST. A couple of hours later he received signals from K0AKJ, W8HXT, and W8CMS via backscatter. Later in the afternoon, Yellowknife started to come through, and he worked KL7AH. On the same day, W5LIU heard EI2W, VE1HT, W1QCC/VE1, Yellowknife, and KL7AH. He also heard backscatter signals from W5SFW. These were all received at his Lubbock, Texas location in the space of two hours, 1005-1220 CST.

W6FZA sent in a report of his November 12th QSO with ZS3G in South Africa. These two stations exchanged RSTs at 1040 PST. W6BAZ worked W1HOY, VE2AOM, and EI2W on the 17th between 0750 and 0850 PST.

From our observer in Bomford, Essex, England, G2BVN, came reports of his six-meter activity on November 17th between 1425 and 1650 GMT. He heard and worked such stations as W1GKE, W8CMS, W1FOS, W5SFW, K0BGW, W0IBL, W6NLZ, and W6BAZ.

Not much TE was in evidence during the second half of November and what there was seemed confined to the South American continent. However, LU3EX did work CT3AE on the 17th around 2050 LU-time (and on additional evenings, too). LU7AT heard YV5EC and YV5AQ on the 18th between 2210 and 2235.

Into December

From Doug, W7WHO, comes word, "50-Mc. DX via sporadic-E has been very good the last few days. Openings on the 19th, 20th, and 21st of December were noticed. The 19th brought in Nebraska, Kentucky, Illinois, and Indiana between 1930 and 2000 MST. Friday, December 20th, the band opened up at 1715 with exceptionally strong signals to Illinois, Nebraska, Arkansas, Alabama, Texas. Saturday brought a little F2 from Maine and Nova Scotia. Any F2 opening to the northeast brings in W1QCC/VE1 and his s.s.b. signal. E-layer brought in fair to good signals from Iowa, Montana, South Dakota until about 1230 MST."

2/57

1957 $\Phi = 270$

JA8BU in Sapporo, Japan, caught an opening to Alaska on December 1st at 0820 JST. Between that time and 1035, he worked KL7AH, KL7CDS, and KL7AUV. On the next day, VE1HT received signals from EI2W, XE1GE, and W7RUX at 1045 AST. Business was bocming this month!

A Few Things About DX QSLing

If you're an old hand at working DX (and getting QSLs from same) on the high frequencies, you might just as well skip over this section; it won't tell you anything new. But -- if the recent F2 onslaught into the v.h.f. region has brought you your first ham contacts with really faraway places, and, you're not having too much luck at getting these contacts confirmed -- please read on. You just might find the answer.

First of all, you should be familiar with the operation of the A.R.R.L. QSL Bureau. This service is explained in nearly every issue of QST (look in the index small print under "A.R.R.L. QSL Bureau"). Its purpose is "to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world." You see, many foreign hams almost never QSL direct to the stations they work. Instead, they bundle up a batch of cards and send them off to ARRL Headquarters (or else they send them to their own countrie's bureau, which then sends all W, K, VE, VO, KP4, KH6, KL7, and KZ5 cards to ARRL. Here they are divided up again, and mailed off to volunteer QSL Managers in each call area. All you have to do is to send your area QSL Manager (see list in QST) a stamped self-addressed envelope about 4 1/4 x 9 1/2 inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capitol letters in the upper left-hand corner. You'll then receive any cards coming through the bureau system.

An important thing to remember about all this is that the ARRL QSL Bureau as outlined above is a one-way street. Don't send cards intended for DX stations to your area QSL Manager! He just isn't set up to handle them. There is, however another bureau arrangement intended to serve just that purpose; this is the International QSL Bureau. The cooperating bureaus making up this system are listed in QST each June and December (look under "IARU News" in the index fine print). If you don't want to send your cards directly to the stations involved (or you don't have their addresses) you may send them to the bureau of the proper country as listed. In the case of countries where no bureau is listed (there aren't many), W, K, and VE amateurs may send the cards to ARRL Headquarters for disbribution.

We hope this sheds a bit of light on the QSL bureau scheme for at least a few of you. One further important requirement for its proper functioning is patience, including yours. The wheels of the bureau move slowly sometimes (as does the oversea mail itself) but the system does work. Take advantage of it!

This Month's Certificate Winners

An even twenty stations join our "Consistent Reporting Award" honor role this month. This brings the total number of certificates issued during the year 1957 to a healthy 271. Hearty congratulations all!

K2APS
W2SMX
W5FHS
W5ZUL
K6ECP
K6OPD
W6SUE
W7CET
W7MKW
W8FEU
K9AQP
W9NUC
W9ORW
W9RGH
K0GQG
K0JJA
K0LAF
CT1CO
JA8BU
ZE2JE

REGULAR WORLD DAYS

Here are the dates we should pay special attention to during the first three months of 1958:

January 3, 4, 19, 20
February 10, 18, 19, 26
March 20, 21, 28

Those Antenna Bearings

One subject that seems perenially puzzling to PRP observers old and new is what to put in the "ANTENNA BEARING (if not direct)" column on Form C. In an effort to clear up this situation, we're going to start the new year off by providing a few simple rules. Please don't anyone skip over them; you'll never know if you're making your reports as useful as possible unless you read what follows:

1) Do not put down any antenna bearing when you believe the signal to be arriving via a straight, direct path from the other station. Examples: normal sporadic-E and transequatorial scatter signals.

2) Do not put down an antenna bearing just because your antenna happened to be aimed in some direction other than the direct one. Example: a sporadic-E signal which was strong enough to come in well off the back of your beam.

3) Do put down the antenna bearing when you believe that the signal is arriving via an indirect path from the other station. Examples: most backscatter and auroral contacts. Note: In a few areas, antenna headings for auroral and/or backscatter work appear to be direct or nearly so. In these cases, and only these cases, list the direct heading.

News And Notes

SP5AR Ready For Business

Richard Rossa, SP5AR, of Warsaw, Poland writes that he is all set up on 50.04 Mc. with 60 watts from an 829, a crystal-controled converter-homemade superhet receiving combination, and a four-element yagi. His operating schedule is as follows: Saturday - from 1400 to 1700 GMT; then after the beginning of the TV program only listening without calling. If he hears any signals, he will call, but such a QSO may not exceed five minutes because of TVI. Listening will continue until 2200 GMT.

Sunday - Active from 0600 to 1600 GMT; as above only listening, but short QSO possible. Monday - Only listening possible; only short QSO without long calling from his end. Tuesday - TV does not operate; He will be active from 1530 until 2300 GMT with long calls in all directions. Other days of the week - Same as Monday.

Gs Get Limited Six-Meter Authorization

Here's a quote of considerable interest from a letter just received from John Rouse, G2AHL, who is Deputy General Secretary of the R.S.G.B.: "I am writing to tell you that the G.P.O. has agreed to allow selected amateurs in the counties of Northumberland, Monmouthshire, Glamorgan, and parts of the Western Highlands and islands of Scotland to operate on 52.5 Mc. with an input power not exceeding 500 watts for the next six months only. The G.P.O. has also told us that it is prepared to consider for a limited period of six months only amateur transmissions on 52.5 Mc. without any area restrictions between 0100 and 0930 GMT." As G2AHL points out, "the period between 0100 to 0930 GMT looks pretty hopeless, so what interest there is will probably be in the counties mentioned above."

A List Of Active Observers

Our last page this month looks a bit different, doesn't it? As a matter of fact, it's not a part of the bulletin proper; it's intended to be removed and joined with a second sheet which will be coming your way about this time next month. Together these sheets will form what we might call "PRP Operating Aid #2" (if we think of "Instructions for Filling Out Form C" as #1, that is). We call it "ACTIVE PRP OBSERVERS -- 1957".

Now before you say "What do we want with a list of observers -- give us more news!" or something similar, please consider the uses of such a compilation. First of all, suppose you're trying to read a phone signal through heavy QRM; is he saying W1HDQ or W1HEU (as if you didn't know!)? A quick look at your handy list will reveal that W1HDQ is an active PRPer -- most likely that's who it is.

Second, suppose your looking for WAC and you want to check the location of a particular station who isn't telling his QTH -- a look at the list may help you out. We don't promise that all the stations you hear will be there, but then, everybody isn't in the Call Book these days either, and our typeface is lots larger! Lastly, suppose you want to set up a sked with some station in a particular area on a particular band; our list tells not only where the station is, but what bands its operator patronizes (which ones above 50 Mc., anyway). Sold? We thought so!

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

MPS/h

This bulletin is published and distributed by the American Radio Relay League, Inc., West Hartford, Connecticut as a part of the performance of Contract No. AF19(604)-2171 with the Geophysics Research Directorate, Air Force Cambridge Research Center, Air Research and Development Command.

ACTIVE PRP OBSERVERS -- 1957

1 - 50 Mc. 2 - 144 Mc. 3 - 220 Mc. 4 - 432 Mc.

W1AHE, Stow, Mass. 1,2
W1AZK, N. Chichester, N.H. 2,3
W1CIE, W. Hartford, Conn. 1
W1CLS, Weston, Mass. 1
W1CPC, Pawtucket, R.I. 1
W1CSG, Lonsdale, R.I. 1
W1DEW, Collinsville, Conn. 1
W1DGA, Wilbraham, Mass. 1,2
W1DRZ, Auburn, Mass. 1
W1ELP, Lexington, Mass. 1
W1FVV, Hartford, Conn. 1
W1FVZ, Bristol, R. I. 1
W1GAV, Plantsville, Conn. 1
W1GRT, Haverhill, Mass. 1
W1HBH, Milford, Conn. 1
W1HDQ, Canton, Conn. 1,2
W1HUN, Southampton, Mass. 1
W1JJO, Springfield, Mass. 2
W1JSM, Waltham, Mass. 2
W1KHL, Norwalk, Conn. 1,2
W1LGE, Windsor Locks, Conn. 1
W1LUW, Waltham, Mass. 1
W1MEG, Framingham, Mass. 1,2
W1MEP, Bennington, Vt. 1,2
W1MMN, Barre, Vt. 2
W1NH, Bennington, Vt. 2
W1NMQ, Fiskdale, Mass. 1
W1OAX, Coventry, Conn. 2
W1PHR, Wethersfield, Conn. 1,2
W1PYM, Auburndale, Mass. 2
W1QCC/VE1, Pictou, Nova Scotia 1
W1REZ, Fairfield, Conn. 2
W1RFU, Wilbraham, Mass. 1,2,3
W1SUZ, Winsted, Conn. 1
W1UHE, N. Tiverton, R. I. 1,3
W1VLH, W. Hartford, Conn. 2
W1VSE, New Britain, Conn. 2
W1WAS, S. Portland, Me. 1
W1WLP, Winthrop, Mass. 1

W2ALL, Rochester, N. Y. 1
K2APS, Vernon, N. Y. 2
W2AZL, Plainfield, N. J. 2
W2BLV, Haddon Heights, N.J. 2,4
W2BVJ, Roseland, N.J. 1
K2CBA, Troy, N.Y. 1
W2CBB, Oradell, N.J. 2
K2CEH, Webster, N.Y. 1,2
W2COT, Maplewood, N.J. 1
W2CXY, Chatham, N.J. 2
K2DIG, Tenafly, N.J. 1,3
K2DNF, Moorestown, N.J. 2
W2EJO, Olean, N.Y. 1
W2EQO, Fultonville, N.Y. 2
W2EWN, Haddonfield, N.J. 1
K2GCU, Huntington Sta.,L.I.,N.Y. 1
K2GQI, Keyport, N.J. 2
K2GRI, Porter Corners, N.Y. 1,3
K2HCY, N. Babylon, L.I.,N.Y. 1
W2HF/2, Carmel, N.Y. 1,2
K2HOD, Delanco, N.J. 1,2
K2HPN, Delmar, N.Y. 1
K2HWC, Moravia, N.Y. 1
K2IAX, East Aurora, N.Y. 1
W2IDZ, Denville, N.J. 1
K2ITP, Riverton, N.J. 1,2
K2ITQ, Riverton, N.J. 1,2
K2IZV, Metuchen, N.J. 1
W2JJC, New Market, N.J. 2
W2JTE, Fairport, N.Y. 1
W2JXC, Seneca Falls, N.Y. 1
K2JXD, Wyandanch, L.I.,N.Y. 1
K2LVA, N. Tonawanda, N.Y. 1
W2LWI, Wappingers Falls, N.Y. 1,2
W2LXE, Tonawanda, N.Y. 2
K2LZL, Buffalo, N.Y. 1
K2MEI, Madison, N.J. 1
W2MEU, Bound Brook, N.J. 1
W2NCF, Cedar Grove, N.J. 2
W2NLY, Metuchen, N.J. 2
W2ORA, Collingswood, N.J. 1
W2ORI, Lockport, N.Y. 2
K2PCG, Livingston, N.J. 1
K2PQY, Massapequa, N.Y. 1
K2PRE, Vineland, N.J. 1
K2PTB, Union, N.J. 1
K2QLA, Cortland, N.Y. 1
W2QNA, Niagara Falls, N.Y. 1,2
W2RHQ, Syracuse, N.Y. 1
K2RJN, Oneonta, N.Y. 1
K2RRG, Allendale, N.J. 1
K2RRI, Somerville, N.J. 1
W2RXG, Chenango Bridge, N.Y. 2
W2SHV, Johnson City, N.Y. 1
W2SMX, Farmingdale, L.I.,N.Y. 2
K2TJY, Fairport, N.Y. 1
W2TTM, Morgan, N.J. 1
K2UJT, Rochester, Minn. 1
W2UTH, Victor, N.Y. 1,2
W2VDI, Scotia, N.Y. 2
K2VIV, Bergenfield, N.J. 1
W2VLL, Lewiston, N.Y. 1
W2WZR, Nedrow, N.Y. 1,2
W2YIK, Syracuse, N.Y. 1
W2ZKE, Towaco, N.J. 1,2

W3AJD, East Berlin, Penna. 1
W3AMO, Collingdale, Penna. 1
W3ARW/W3MRQ, Old Forge, Penna. 1,2,3
W3BBG, Baltimore, Md. 1
W3BJU, Factoryville, Penna. 1
W3BNC, Hagerstown, Md. 2
W3BRU, Perkasie, Penna. 1
W3CGV, Wilmington, Del. 1
W3CJK, Frederick, Md. 2
W3FEY, Lancaster, Penna. 1,2
W3FPH, Leechburg, Penna. 1,2
W3GKP, Spencerville, Md. 2
W3HPZ, Drexel Hill, Penna. 1
W3KMV, Rockville, Md. 1
W3LZD, Dunmore, Penna. 1, 2, 3
W3LZZ, Baltimore, Md. 2
W3OJU, District Heights, Md. 1
W3OTC, Frederick, Md. 1,2
W3PMG, Chinchilla, Penna. 1,2
W3RUE, Pittsburgh, Penna. 1,2
W3TDF, Langhorne, Penna. 1,2
W3TFA, Carole Highlands, Md. 2
W3TIF, Johnstown, Penna. 1
W3UBO, Telford, Penna. 1
W3UQJ, York, Penna. 1
W3VAM, Hagerstown, Md. 1,2
W3YHI, APO 12, N.Y. 2
W3YNC, Oley, Penna. 1
W3ZRR, Philadelphia, Penna. 1
W3ZYK, Mechanicsburg, Penna. 1

W4ALY, Buena Vista,Va. 1
K4ASO, Lexington, Va. 1
W4AYV, Umatilla, Fla. 1

1 - 50 Mc. 2 - 144 Mc. 3 - 220 Mc. 4 - 432 Mc.

W4BUZ, Greensboro, N. Carolina 2
K4CFZ, Buena Vista, Va. 1
K4CHA, Buena Vista, Va. 1
W4CSN, Henderson, Ky. 1
W4CSS, Ft.Walton Beach, Fla. 1
W4CVQ, Raleigh, N. Carolina 1
W4DAF, Erlanger, Ky. 1
W4DPE/BNZ, Sparta, Tenn. 1
W4DWY, Arlington, Va. 1
K4EKO, Glasgow, Va. 1
W4EQM, Langdale, Ala. 1,2
K4EUS, Chester, Va. 1,2
K4EYE, Bristol, Va. 2
W4FBH, Decatur, Ga. 1
W4FJ, Richmond, Va. 2
W4FLW, Dresden, Tenn. 1
W4FNR, Ft.Lauderdale, Fla. 1
W4FWH, Doraville, Ga. 1,2
W4GJO, Sarasota, Fla. 1
K4GYZ, Atlanta, Ga. 1
W4HHK, Collierville, Tenn. 1,2
W4HJQ, Glendale, Ky. 1,2
K4HTO, Middletown, Ky. 1
K4IEA, Buena Vista, Va. 1
K4IJG, Oak Ridge, Tenn. 1
W4IKK, Signal Mountain, Tenn. 1,2
W4INM, Chattanooga, Tenn. 1
W4IUJ, West Palm Beach, Fla. 1
K4JJA, Locust, N. Carolina 1
K4JYQ, Hopewell, Va. 2
K4KLA, Irvington, Ky. 1
K4KSM, Asheville, N. Carolina 1
K4KYS, Oak Ridge, Tenn. 1
W4KZF, Ludlow, Ky. 1
W4LLD, Charlottesville, Va. 1,2
W4LNG, Atlanta, Ga. 1,2
K4LZQ, Oak Ridge, Tenn. 1
K4MBM, Huntsville, Ala. 1
W4MS/W4RE, Pensacola, Fla. 1
K4AGM, Pensacola, Fla. 1
W4NHW, Greensboro, N. Carolina 2
W4NWB, Travelers Rest, S. Carolina 1
W4OLO, Manchester, Tenn. 1
W4RL, Herndon, Va. 1
W4RMU, Oceanway, Fla. 1
W4SGI, Oak Ridge, Tenn. 1
W4TDW, Knoxville, Tenn. 1
W4TDZ, Chattanooga, Tenn. 1,2
W4THL, Alexandria, Va. 1
W4TKE, Gainesville, Fla. 1
W4UCH, Sterling, Va. 1
W4UMF, Falls Church, Va. 1,2
W4VVE, Hampton, Va. 2
W4WNH, Elizabethtown, Ky. 2
W4YGK, Manchester, Tenn. 1
W4YSB, Winston-Salem, N. Carolina 2
W4ZBQ, Knoxville, Tenn. 1
W4ZXI, Greensboro, N. Carolina 1,2
W4ZZ, Knoxville, Tenn. 1

K5ABW, Austin, Texas 1
K5ADV, Dallas, Texas 1
W5ATW, Waco, Texas 2
K5BDT, Arlington, Texas 1,2,3
W5BXA, Amarillo, Texas 1
K5CHC, New Orleans, La. 1
W5CVW, Ft.Worth, Texas 1
K5CYK, Amarillo, Texas 1
K5DCQ, Irving, Texas 1
W5DFU, Tulsa, Okla. 2
K5EBZ, Austin, Texas 1
W5EDZ, San Antonio, Texas 2
W5EMT, Forrest City, Ark. 1
W5EXZ, San Antonio, Texas 1
W5EZB/6, El Paso, Texas 1
W5FEG, Dallas, Texas 1
W5FHS, Shreveport, La. 1
W5FRK, Ft.Worth, Texas 1
W5FXN, Austin, Texas 1
W5FYW, Houston, Texas 1
K5HQZ, Alamogordo, N. Mex. 1
K5HTH, Amarillo, Texas 1,2
W5IEO, Jackson, Miss. 1
W5IOW, Ada, Okla. 2
W5JBW, Sulphur, La. 2
W5JUS, Bryan, Texas 2
W5KVC, Ft.Worth, Texas 1
W5KWP, Albuquerque, N. Mex. 1
W5LFM, San Antonio, Texas 1
W5LFQ, Lubbock, Texas 1
W5LID, Odessa, Texas 1,2
W5LIU, Lubbock, Texas 1
W5MJD, Amarillo, Texas 1,2
W5MWW, New Boston, Texas 1
W5SFW, Amarillo, Texas 1
W5SNX, Slaton, Texas 1,2
W5TGF, Garland, Texas 1
W5UMH, Ft.Worth, Texas 1
W5VCX, Owasso, Okla. 1
W5VWU, Albuquerque, N. Mex. 2
W5VV, Austin, Texas 1
W5ZUL, Dallas, Texas 1
W5ZVF, Little Rock, Ark. 1

W6ABN, Long Beach, Calif. 1
W6AFC, Redwood City, Calif. 1
W6AHE, San Diego, Calif. 2
W6AJF, Sonoma, Calif. 1,2
W6ANN, San Pedro, Calif. 1
W6BAZ, Santa Rosa, Calif. 1
W6BJI, Fresno, Calif. 1
W6BWG, San Gabriel, Calif. 1
W6DNG, Compton, Calif. 2
W6DQJ, Rivera, Calif. 1
K6EDX, Fresno, Calif. 1
K6EPT, Long Beach, Calif. 1,2
W6FKO, San Bernardino, Calif. 2
W6FZA, Porterville, Calif. 1
W6GCG/W6LHV, Sunnyvale, Calif. 1
K6GGT, Lewiston, Calif. 1
K6GK, Oakland, Calif. 1
K6GOX, Fresno, Calif. 1
W6GQZ, Ripon, Calif. 1,2
K6GTG, Arlington, Calif. 1
K6HCP, San Jose, Calif. 1
K6HHA, Inglewood, Calif. 1
W6JAM, Long Beach, Calif. 1
K6JQB, Long Beach, Calif. 1
W6KUH, Loma Linda, Calif. 1
K6LLJ, Oakland, Calif. 1
W6MMU, Los Angeles, Calif. 1,2
W6NLZ, Palos Verdes Estates, Calif. 1,2
W6NTC, Palos Verdes Estates, Calif. 1,2
K6OPD, Lancaster, Calif. 1
K6PBW, Northridge, Calif. 1
K6PHE, Buena Park, Calif. 1
W6PUZ, Pasadena, Calif. 1
K6QQL, Millbrae, Calif. 1
W6RLB, Redwood City, Calif. 1
K6RNQ, Oakland, Calif. 1

1 - 50 Mc. 2 - 144 Mc. 3 - 220 Mc. 4 - 432 Mc.

K6SHO, Fresno, Calif. 1
W6SUE, Oakland, Calif. 1
K6TYW, San Mateo, Calif. 1
W6UWG, Arlington, Calif. 1
W6VDG, Redwood City, Calif. 1
K6VIN, Mountain View, Calif. 1

K7AAD, Beaverton, Oregon 1
W7ACD, Shelley, Idaho 1
W7BDU, Eugene, Oregon 1,2
W7CET, Oregon City, Oregon 1
W7CIV, Seattle, Wash. 1
W7CJN, Butte, Montana 1
W7CLT, Portland, Oregon 1
W7COL, Rigby, Idaho 1
W7CVE, Salt Lake City, Utah 1
W7DYD, Bothell, Wash. 1
W7FYC, Clearfield, Utah 1
W7FYG, Clearfield, Utah 1
* W7GRA, Benson, Arizona 1
W7HWO, Benson, Arizona 1
W7ILL, Big Piney, Wyo. 1
W7INX, Portland, Oregon 1
W7JBX, Phoenix, Arizona 1
W7JHX, Gig Harbor, Wash. 1
W7JIP, McMinnville, Oregon 2
W7JRG, Billings, Montana 1,2
W7JU, Boulder City, Nev. 1,2
W7LHL, Seattle, Wash. 2
W7MKW, Olympia, Wash. 1
W7QDJ, Clearfield, Utah 1
W7RGS, Milwaukie, Oregon 1
W7RQS, Orem, Utah 1
W7SP, Saltair, Utah 1
W7UFB, Casper, Wyo. 1
W7VES, Ogden, Utah 1
W7VJV, Oswego, Oregon 1
W7VPT, Vancouver, Wash 1
W7WLV/6, North Hollywood, Calif. 1
W7WSP, Bay City, Oregon 1
W7YJE, Seattle, Wash. 1
W7ZOW/W7ZFS, Aberdeen, Wash. 1

K8AOL, Willoughby, Ohio 1
W8AXX, Dayton, Ohio 2
W8BAX, Columbus, Ohio 2
W8BJH, Muskegon, Mich. 1
W8BKI, Charleston, W.Va. 2
K8BPY, Cedarville, Ohio 1
K8BTE, Cadillac, Mich. 1
K8BTV, Lima, Ohio 1
K8BYP, St. Marys, Ohio 1
K8BYQ, Spring Valley, Ohio 1
K8CBA, Cincinnati, Ohio 1
K8CIC, Muskegon, Mich. 1
W8CMS, Newton Falls, Ohio 1
W8CSA, Springfield, Ohio 1,2
K8CZP, Dearborn, Mich. 1
W8DEJ/7, Phoenix, Arizona 1
W8DDQ, Nitro, W.Va. 1
W8DGF, Cleveland, Ohio 2
K8DKE, Lebanon, Ohio 1
K8DKO, Mansfield, Ohio 1
W8DFW, Dayton, Ohio 1,2
K8DWX, Lakewood, Ohio 1
W8DX, Detroit, Mich. 2,3
W8EHW, North Hampton, Ohio 1,2

W8EPW, Warren, Ohio 1
W8EVH, Columbus, Ohio 1
W8FAZ, Cleveland, Ohio 2
W8FEJ, Lebanon, Ohio 1
W8FEU, Wyandotte, Mich. 2
W8GHX, Tipp City, Ohio 1
W8GNN, Wyandotte, Mich. 2
W8HGN, Royal Oak, Mich. 1
W8HXT, Mansfield, Ohio 1
W8IFX, Cincinnati, Ohio 2
W8ILC, Dayton, Ohio 2
W8INQ, Dayton, Ohio 1
W8IOV, Columbus, Ohio 1
W8JUV, Muskegon, Mich. 2
W8KAY, Akron, Ohio 2
W8LOF, Piqua, Ohio 1,2
W8LPD, Cincinnati, Ohio 1,2,3
W8MAH, Bay City, Mich. 1,2
W8MVN, Cincinnati, Ohio 1
W8NAF, Dayton, Ohio 1,2
W8NQD, Ashland, Ohio 1
W8OJN, Akron, Ohio 1
W8PCK, Cozaddale, Ohio 1
W8PLQ, Dayton, Ohio 1,2
W8PT, Benton Harbor, Mich. 1,2
W8BYQ, Battle Creek, Mich. 1,2
W8RBD, Mentor, Ohio 1
W8RFW, Grand Rapids, Mich. 1
W8SSO, Wyandotte, Mich. 1
W8TCO, Cincinnati, Ohio 1
W8UCG, Muskegon, Mich. 1
W8URO, Drayton Plains, Mich. 1,2
W8VYG, Dearborn, Mich. 1
W8WRN, Columbus, Ohio 1,2,3
W8WXV, Mansfield, Ohio 2
W8ZCQ, Columbus, Ohio 1
W8ZCV, Waynesville, Ohio 1

W9AAG, Woodhull, Ill. 1,2
W9AKR, Skokie, Ill. 1
W9ALU, Metamora, Ill. 1
K9AQP, Valparaiso, Ind. 2
W9ARN, Bartonville, Ill. 1
W9BQC, Rockford, Ill, 1,2
W9DRN, Des Plaines, Ill. 2
W9DSP, Chippewa Falls, Wis. 1,2
K9DXT, Peoria, Ill. 1
K9EFU, Chicago, Ill. 1
W9EGH, Goshen, Ind. 2
K9EID, Marissa, Ill. 1
W9EJF, Brownsburg, Ind. 1
K9ETD, Hudson, Wis. 1
W9FEM, Washington, Ill. 1
W9FJI, Evansville, Ind. 1
W9FVJ, Toledo, Ill. 1,2
W9GAB, Beloit, Wis. 2
W9GLR, Champaign, Ill. 2
W9GMK, Chicago, Ill. 1
K9HMB, Winnetka, Ill. 1
K9HRP, Chicago, Ill. 1
W9IMG, Harvey, Ill. 1
W9JAQ, Nashotah, Wis. 2
W9JCI, Milwaukee, Wis. 1
W9JFP, Milwaukee, Wis. 1
W9KLR, Rensselaer, Ind. 1,2
W9KPS, Taylorville, Ill. 1,2
W9MFE, Ravenswood, Ind. 1

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ADDITIONS:

W3BGI, Mechanicsburg, Penna. 1 (sheet #1)
*W7GWB, Portland, Oregon 1 (above)

1 - 50 Mc. 2 - 144 Mc. 3 - 220 Mc. 4 - 432 Mc.

W9MHP, Indianapolis, Ind. 1
W9NUC, Janesville, Wis. 1
W9ORW, Valparaiso, Ind. 2
W9QKM, Glenview, Ill. 1,2
W9QUV, Moline, Ill, 1,2
W9RGH, Washington, Ill. 1
W9SFU, Brownsburg, Ind. 1
W9TWT, Belleville, Ill. 1
W9UIA, Evansville, Ind. 1
W9VDP, Rock Island, Ill. 1
W9VZP, Delavan, Wis. 1
W9YIL, Ravenswood, Ind. 1
W9ZIH, Chicago, Ill. 2

W0BTG, Lincoln, Nebr. 1,2
K0CEC, Buffalo, Mo. 1
K0CLJ, Denver, Colo. 1
W0CNM, Grand Junction, Colo. 1
K0CRU, St. Louis, Mo. 1
W0DXY, Canby, Minn. 2
W0EIM, Perry, Iowa 1
K0EMQ, Cedar Rapids, Iowa 2
W0FKM, Joplin, Mo. 2
W0FKY, Grand Junction, Colo. 1
K0GKR, Lakewood, Colo. 1
K0GQG, Osseo, Minn. 1
W0HXY, St. Cloud, Minn. 2
K0IAN, Papillion, Nebr. 1
W0IBL, Mt. Vernon, Mo. 1
W0IC, Denver, Colo. 1,2
W0IJR, Denver, Colo. 1
W0IXF, Littleton, Colo. 1
W0JAS, Salina, Kans. 1
K0JET, Dubuque, Iowa 1
K0JJA, Marion, Iowa 1
K0JNH, St. Louis, Mo. 1
W0JOL, Dana, Iowa 1
K0LAF, Aurora, Mo. 1
K0LSL, Denver, Colo. 1
W0MAQ, Kansas City, Mo. 2
W0MID, Raytown, Mo. 1
K0MOM, Buffalo, Mo. 1
W0MOX, Lawrence, Kans. 2
W0MVG, Salina, Kans. 1
W0ODI, Affton, Mo. 1
W0PKD, Salina, Kans. 2
W0QDH, Salina, Kans. 1,2
W0SMJ, Indianola, Iowa 1,2
W0TGC, St. Louis, Mo. 1,2
W0TII, Denver, Colo. 1
W0USQ, Davenport, Iowa 1
W0VEY/6, Fullerton, Calif. 1
W0VWO, Raytown, Mo. 1
W0WKB, Ankeny, Iowa 1
W0WKG, St. Louis, Mo. 1
W0YOY, Wilber, Nebr. 1
W0YSJ, Fargo, N.Dak. 2
W0YUQ, Manhattan, Kans. 1
W0YZZ, St. Joseph, Mo. 1
W0ZJB, Wichita, Kans. 1,2

SWL14, Burlington, Vt. 1
SWL21, Hightstown, N.J. 1
SWL51, San Antonio, Texas 1
SWL81, Adrian, Mich. 1
SWL01, Manhattan, Kans. 1
SWLF1, Revesby, N S W, Australia 1
SWLF4, Malsryd, Sweden 1,2

CE1AH, Chuquicamata, Chile 1
CE3TB, Santiago, Chile 1
CO2ZX, Habana, Cuba 1

CT1CO, Lisbon, Portugal 1
CT3AE, Calheta, Madeira Islands 1
CX1AQ, Montevideo, Uruguay 1
F9BG, Toulon, Var, France 1
G2BVN, Romford, Essex, England 1
I1ER, Milan, Italy 1,2
JA1AHS, Tokyo, Japan 1
JA1ARC, Kamakura-City, Japan 1
JA1ATF, Tokyo, Japan 1
JA1BU, Kanagawaken, Japan 1
JA1EL/JA1NK, Shinagawa, Tokyo, Japan 1
JA1IA, Tochigi, Japan 1
JA1KS, Tokyo, Japan 1
JA1QC, Tokyo, Japan 1
JA1VG, Tokyo, Japan 1
JA2GR, Nagoya, Japan 1
JA2ID, Shizuoka-City, Japan 1
JA2IF, Aichi, Japan 1
JA2KB, Shizuoka City, Japan 1
JA2QR, Nagoya, Japan 1
JA3JJ, Kyoto, Japan 1
JA4HM, Yamaguchi City, Japan 1
JA5AM/JA5EU, Tokushima City, Japan 1
JA5EB, Kochi, Japan 1
JA7BL, Iwate, Japan 1
JA7BY, Sendai, Japan
JA7EV, Akita, Japan 1
JA8BU, Hokkaido, Japan 1
JA8BY, Hokkaido, Japan 1
KH6CCZ, c/o FPO, San Francisco, Calif. 1
KL7CDG, Anchorage, Alaska 1
KL7TOB, APO, Seattle, Wash. 1
KL7VT, Summit, Alaska 1
KP4ABN, San Juan, Puerto Rico 1
KZ5JS, Panama, Canal Zone 1
LA7Y, Oslo, Norway 1
LA9T, Moss, Norway 1
LU3EX, Buenos Aires, Argentina 1
LU4HG, Cordoba, Argentina 1
LU5CK, Buenos Aires, Argentina 1
LU7AT, Buenos Aires, Argentina 1
LU8AE, Buenos Aires - Rep, Argentina 1
LU9MA, Mendoza, Argentina 1
OA4C, Lima, Peru 1
PJ2AO, Aruba, Neth.Antilles 1
SM5BLC, Lidingo, Sweden 1
SM5CHH, Stockholm, Sweden 1
SM6BTT, Goteborg, Sweden 1
SM7ZN, Vaernamo, Sweden 1,2
TG9JW, Guatemala City, Guatemala 1
VE1EF, Halifax, N.S. Canada 1
VE1HT, Sydney, N.S. Canada 1
VE2AOM, Montreal, Que. Canada 1,2
VE2CD, Saint-Laurent, Que. Canada 2
VE2FF, Lachine, Que. Canada 2
VE2KH, Montreal, Que. Canada 2
VE3AET, Lansing, Ont. Canada 1
VE3AGU, Ottawa, Ont. Canada 1
VE3AIB, Toronto, Ont. Canada 1,2,3
VE3ANY/W8, Livonia, Mich. 1
VE3BQN, Toronto, Ont. Canada 1,2,3
VE3BZV, Toronto, Ont. Canada 1
VE3DIR, Toronto, Ont. Canada 2
VE3HW, Don Mills P O, Ont. Canada 2
VE6WT, Calgary, Alta, Canada 1
VE7AQQ, Sointula, B C, Canada 1
VK4NG, Queensland, Australia 1
VQ2PL, Livingstone, Northern Rhodesia 1
*VS6CJ, Hong Kong 1
ZC4IP, Limassol, Cyprus 1
ZC4WR, Limassol, Cyprus 1
ZE2JE, Salisbury, Southern Rhodesia 1
ZE2JV, Salisbury, Southern Rhodesia 1
ZS2Y, Port Elizabeth, South Africa 1
ZS5HV, Malvern Natal, South Africa 1

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*XE1GE, Cuernavaca, Mor, Mexico 1

THE ARRL PRP IGY NEWS

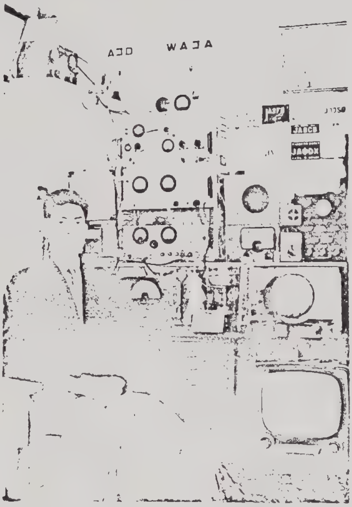
MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 14 FEBRUARY, 1958

50-Mc. ACTIVITY IN INDIA

SOUTH AMERICAN IGY STATIONS ON THE AIR

MORE NEWS, MORE NOTES, MORE HINTS, MORE QUOTES



ABOVE: Another 100% homebuilt Japanese station (except for the TV set, anyway). This is JA8CJ. The AJD and WAJA awards on the wall testify to operator T. Fukuhara's abilities. Photo is courtesy W5FXN.

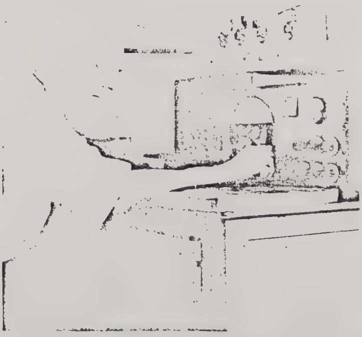
BELOW: Eduardo Leas, PY2AXX, and his San Paulo, Brasil station. His contact with JA6FR last April came very close to setting a new world's record.

NEWS FROM INDIA

What with 50 Mc. WAC claims and lists of countries worked that are as long as the states lists many fellows had a few years ago, the possibility of adding still another nation to one's bag is certainly of interest. We're pleased to report that A. N. Athavale, VU2EJ of Poona, India, has been set up for both transmitting and listening on six meters since about January 15. As a matter of fact, he's the fellow you see pictured below.

Equipment consists of a crystal controlled converter which seems to be working satisfactorily, an 807 transmitter which is working as satisfactorily as 807s ever work on this frequency, and a beam which is mounted on the same boom as VU2EJ's 10 meter quad (to facilitate crossband work).

Now, how do we go about working him? We suspect that the first fellows to have a go at India will do so, at least in part, via transequatorial scatter. The evening chances for Australia and South Africa wouldn't seem any worse than for the contacts which have been made between CT3AE and southern South America. Then too, there are those very long haul transequatorial (but with a large east-west component added) openings that seem to accompany the TE. These might extend the range



somewhat. Those of us in the northern hemisphere will probably have to wait (and hope) till next winter for some more regular F2.

We understand that VU2EJ plans to listen on 50 Mc. from 1715 to 1730 IST (Indian Standard Time -- 5 1/2 hours ahead of GMT) each day, and also send CQs. Between 1730 and 1745, he will listen for replies. At 2000, he will be operating on the 28-Mc. band, looking for stations to check with on six.

While on the subject of India, LA7Y tells us that VU2CQ of Bombay is operating on 50 Mc. also. FLASH! Just today received word from W4ANE that VU2CQ is indeed operating on six meters. Conditions are said to have been very good to Africa and South America.

IGY STATIONS IN SOUTH AMERICA

No doubt most of you read the article about the National Bureau of Standards Equatorial Region Scatter Program in QST for August, 1957. However, what with the spring TE season being nearly upon us, it's just about time for a reminder about what this program offers to the 50-Mc. amateur in the way of beacon transmissions. Without going into the whys and wherefores (we suggest you reread the Bowles-Cohen article for them), there are three transmitters involved. These have all been in operation since November 15, 1957, with the exception of a short break around Christmas time.

First of all, there is CE8AE in Antofagasta, Chile. Here, a high power rig (several kilowatts) feeds both a large rhombic directed northwestward and a pair of yagis aimed to the east. Its frequency is 49.96 Mc. OA3AAE, 49.92 Mc., in Arequipa, Peru, is the second installation. High power is used here, too, with a rhombic pointing roughly northwest. The third transmitter, with the call OA3AAF, is a low power affair located at Huancayo, Peru. This frequency is 49.88 Mc.

Transmission from all three stations will be simply an unmodulated carrier most of the time. On the hour and half hour, the transmissions will be interrupted for approximately two minutes. Identification in code will be made just before the transmitter goes off for the two-minute break. A number of PRPers including LU3EX, LU7AT, and XE1GE reported hearing one or more of these stations during November and December. They're fair game for the rest of you, too. Let us hear about how you make out!

PRP AWARD WINNERS FOR THE MONTH

Here are the latest recipients for PRP Consistent Reporting Award certificates. Endorsement stickers are still going out at a rapid rate, too. Congratulations all!

W1ELP
W2JTE
K2PQY
K2TJY
W5IEO
W6ANN
K6ICK
K6PHE
K6VIN
W7JRG
W7JU
W8EGN
CT3AE
VE1HT

PROPAGATION NEWS COLUMN

by Constance Campbell, W1CIE

144 Mc. During December and January

We had an easy job spotting the auroral openings during the periods December 15-31 and January 1-15. There was a small amount of auroral activity on the evening of December 19th and wide-spread openings occurred on the 30th and 31st. Early morning and late evening of January 1st and the evening of January 9th were good times also. Your auroral reports were confined in practically every case to only these times.

Fred, W1OAX, of Coventry, Conn., was in on the December 31st evening activity. Between 1805 and 2045 EST he heard such stations as W9EGH, W2BLV, W1AZK, W8BAX, K4EUS. His antenna bearing varied from N to NNW to NW for maximum signal results. Also on the 31st, W2BLV received signals from W2LWI, W1COT, W9ZIH, and W8DX at about the same time. He had this to say: "General opinion here is that aurora signals from the northeast area or from the north were the best of all during this aurora - signals from the west were not up to their usual strength here. However, no one can say that the old year did not go out with a bang." From 2000 to 2037 EST, W9EGH, W1REZ, W1AJR, and W1IZY were coming through to K4EUS in Chester, Va.

It looked to us as if this 31st opening faded out before midnight to give everyone a chance to usher in the new year formally! However, the band was open again shortly after 1958 arrived. Again, W1OAX was on hand from 0036 to 0100 to receive auroral flutters from K2GQI, W4OIK, W8LCY, and W1AZK.

50 Mc. at the End of 1957

We could write a great many words about the condition of 6 meters during the last two weeks in December. We'll let K6PBW express our enthusiasm for us: "In over 2 1/2 years of operation on 6 meters, I have never seen band conditions like these, especially on the 21st, 22nd and 30th. Occurance of Sporadic-E skip and F2 propagation had never before been observed at the same time at this station - W6TMI claims to have worked VE7 and VE1 simultaneously!" Sporadic-E openings were present on practically every day of this period and F2 and back scatter contacts were made in great numbers. CT1CO, SM7ZN, LA7Y, and LA9T were worked and heard innumerable times by U.S. hams.

W0TII reports that he found the band open to Kentucky, Mississippi, Missouri, and Indiana about 1700 MST on December 20th. Stations from 'most every state in the south part of the U.S. were coming in - Florida to California. K5EBZ heard K0GQG, W0CGW, W9DSP on the 16th at 1900 CST; worked K9BEO, K0DYT, K0GBW on the 17th around 1800; worked K0AKJ, K9CSI, W0BTG, W0ZTW on the 18th at 1800; worked W0OGW, K6UVS, K6QB on the 20th around 1900. Sporadic-E was in abundance!

F = 287

I1ER received phone signals rating a 6 signal strength from W0SMJ on December 27th at 1625 GMT and on the 29th at 1524. G2BVN wrote that he had heard all call areas except the 6th and had QSOed all but the 6th and 7th call districts, during this same period. Dick Randall, our VSWL observer in Burlington, Vermont, received signals via the F2 layer on the 22nd from W7UGK, W7FEE, W6RLB, W6AJF. On the 28th he heard W7YJE, W7IMU, W7BJW, and others.

F = 371 F = 322

An intriguing observation was sent in by both LA7Y and LA9T. These stations are located about 35 miles apart - LA7Y to the north - with no mountains or other distinguishing geographical features between them. The band seems to open up at LA7Y's location about an hour before LA9T can hear anything. On the other hand, LA9T works and hears W/VE stations up to an hour after they have faded out at LA7Y.

On Into 1958

Most of the Sporadic-E openings were gone during these first two weeks in January. There was still plenty of F2 and back scatter to keep everyone happy, though. G2BVN succeeded in working crossband all U.S. call areas when he QSOed W6NLZ on January 4th at 1648 GMT. He wrote, "I realize that this is not likely to cause a riot but it will be a cycle or two before we get round to doing it again. F -

On January 1st at 0930 CST, K0GQG worked KP4ACH in Puerto Rico for his first contact of the new year. He said that the band was just like 20 meters there every day with back scatter. W7VPT was late for school on the morning of the 17th because of a QSO with TG9JW at 0753-0813 PST. TG9JW came in with a signal strength of 9 and Tom didn't sound too upset about his tardiness. W7INX in Portland, Oregon, reported that the band was wide open 13 of the first 15 days in January. W4UMF, Falls Church, Va., wrote that he copied JA1ANO at 1600 EST on the 4th of January. Sounds like a good start to a promising year!

NEWS AND NOTES

Sputnik Scatter

MS-type propagation was recently put to work for a purpose far removed from point-to-point communication. Our source is a news clipping sent us by Ed Collins of the QST Advertising Department. The place was Ohio State University. There, Prof. John D. Kraus (W8JK) came up with a radio reflection system for tracking Sputnik I. With this method, "radio signals, at a frequency of 20 Mc., from radio station WWV near Washington, were detected at the university after being reflected from the ionization columns produced by the satellites in speeding through the upper atmosphere." Results? It was revealed that Sputnik I brokeup into no less than eight separate pieces; these then disappeared one or two at a time until nothing was left on January 11.

What Is It?

Three PRP observers, LA7Y, LA9T, and SM5BLC, have reported hearing an unidentified signal on about 50.25 or 50.3 Mc. All are most eager to find out what it is. Bo, SM5BLC, says it has been there for about half a year, steady in general, day and night. Chris, LA7Y, hears it as early as 0900 GMT, continuously until late at night. "Until about 1600 GMT it has the usual characteristic fading of F2 signals. Later at night, however, the character of the signal changes. The carrier is weak without a trace of ripple, but with frequent, pronounced bursts and whistles that sound to me just like meteor reflec-

tions. From an S1 carrier the bursts often rise to over S9, and there are often as many as 15 or more per minute." He adds: "If there are so many meteors about, I shall never go out any more without an umbrella!" Sometimes the carrier is modulated with English speech and also music, but the percentage is very low. Only a word now and then can be copied. LA9T says it comes from either NNW or SSE. Anybody know what it is?

Swiss Get 50 Mc.

The following good news is from HE9RDX: "On December 27, 1957, Swiss amateurs have obtained permission to operate in the frequency ranges 50-54 and 71.0-71.5 Mc. The 50-Mc band can only be used when there are no TV transmissions, i.e. on weekdays from about 2200 till 1400 GMT, on Tuesdays also from 1400 till 1600 GMT. TV schedules on Sundays are irregular; from time to time there are transmissions from 0900 till 1000 and from 1400 till 1700 GMT. Maximum power allowed on both bands is 50 watts."

Skeds And Such

K6GOX, Fresno, reports that he is now on the air with a full kilowatt, both phone and c.w. He would like schedules with the states of Nevada, Washington and Texas on Fridays and Saturdays at 1800 hours to 1815 or later (PST). Also on the interest list are skeds with Hawaii. Can anybody help him out?

Along similar lines, K6PBW wants to know if there are any operators west of the Mississippi set up for MS work on 220 Mc. Stand up and be counted, fellows!

News From W2IDZ

Six-meter man extraordinary Ed Ladd, W2IDZ, says he has in service a converter to end all converters. It is a tunable affair with eight bands which covers from 26.9 to 78.0 Mc. This is with 20-kc. calibration points in the 50-Mc. band, and a noise figure of 5.5 db. at 78 Mc. (better at lower frequencies). Needless to say, Ed is interested in skeds with DX on 40 and 70 Mc. as well as 50. But ... it won't be from Denville, N.J. for a while. January 12 he left for the far north -- Cape Perry at 70.3° north and 124.5° west. NOTE: He took the new converter, the famed "Lil Lulu" exciter, and a supply of PRP forms along. Here's your chance for DX north of the Arctic Circle!

Interesting Thoughts From W6KUH

Gorden Simkin, W6KUH, must keep very busy. Besides sending in regular PRP reports plus observations in the 35-50-Mc. spectrum, he has been periodically supplying us with a current 28-day cycle chart listing reception of a number of stations. Some of these are: KUA in Honolulu on 35.58 Mc., BBC on 41.5, 45, and 48.25, and six meters to the east coast and to Hawaii. Here, just presented as food for thought, are his latest comments: "I was interested to note that peak periods of Hawaii up to Sept. 16 and peak periods so far of BBC reception had some coincidence. Also note that both two-meter openings to KH6-land were during peak F2 periods. Also that these both had atomic tests not too far previous to the DX. Also, all noted six meter to KH6-land DX fell in already observed peaks; however, this cycle seems to be changing now." Gorden also sent along photos of two test patterns which the BBC TV stations use. If you have any shots or observations of DX TV on these frequencies, we'll be glad to compare them for you.

Six-Meter Traffic Net

Joe Stoupa, K0IAN, informs us that he is starting a 50-Mc. traffic net in his area (Papillion, Nebraska). The coverage radius is now 75 miles, but an extension of this would be welcome. They are on everynight from 2000 to 2200 CST. Anyone interested in joining up should drop Joe a line at Box 228, Papillion.

Looks like that's all there's room for this month, what with finishing up our list of active PRP observers. Hope you find the latter of use. As for reporting hints this month, we'll just remind you that our reporting periods are one half month long. To make sure you get proper certificate and sticker credit, please don't cover more ground than this on any one report.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 15 MARCH, 1958

IN THIS ISSUE:

NEW TECHNIQUES FOR METEOR-BURST WORK

NORTH-SOUTH OPENINGS BEGIN

PROPAGATION RUNDOWN, NEWS AND NOTES

ABOVE: Herb Johnson, W7GRA (left) and Doug Welsher, W7HWO (right) at the station of W7GRA. Rigs for six and two meters are on the shelves to the rear. W7YVV took the photo just after the first pass of the "Explorer" had been recorded.

BETTER USE OF BURSTS

Last month's PRP News mentioned the use of meteor-scatter techniques to track artificial earth satellites. This month, we're going to describe what may be a prototype for future communications circuits based upon the familiar pings. Our information comes partly from personal observation last August, and partly from the December, 1957 issue of the Proceedings of the IRE. This last bears scanning by all progressive v.h.f. hams, for it contains a dozen meaty articles about the meteors and what can be done with them.

Our present subject is an experimental meteor-burst system now in operation between Palo Alto, California (Stanford University) and Bozeman, Montana (Montana State College). This is an 820 mile path. To begin with, it is now fairly common knowledge that such a circuit must make use of signals which vary tremendously in strength (zero to 50 db above the noise), duration (a few milliseconds to several minutes), and frequency (from 10 to many thousands per hour). For most effective use of such signals, it would be desirable to (A) transmit only when a path exists between

CENTER: Floyd Taylor, W7RGS, from Milwaukie, Oregon, shows us his portable setup for the "Pony Express" transcontinental relay. This will take place during the June QSO Party. See page 7, PRP News number 12.
BOTTOM: Bob Zecher, W2YIK, Syracuse, New York, seated before his very neat station. Rigs for six and two run 75 and 25 watts, respectively. The tube Bob is holding is just for atmosphere -- it probably won't work below 200 meters or so!

the ends of the circuit, and (B) transmit information at the maximum rate possible for the signal strength existing at any given moment. This last, calling for a variable transmission rate, was not made use of in the system to be described for the sake of relative simplicity. Instead, information is transmitted at a fixed, but speeded up, rate, and transmitted only when a usable path exists. Both fsk teletype and voice have been employed.

In order to find out when a path exists and when it doesn't, even a one-way (Bozeman to Palo Alto) circuit such as this must utilize a transmitter and receiver at both ends. In fact, with the system described, both transmitters run continuously. They are both of the frequency-shift-keyed variety (for the teletype system) which means that they both have two alternate, near-by, fixed frequencies. For the information transmitter at Bozeman, these are around 40.38 Mc., and 32.80 Mc. is used for the link control transmitter at Palo Alto. Let us call these locations T and R, respectively.

The transmitter at T runs continuously on one of its two frequencies. So does the one at R. When a path exists, the signal from T is received at R. When this signal reaches a certain strength, it generates a "link start control signal" which causes the transmitter at R to shift to its alternate frequency. This shift is received and detected at T, and causes T's transmitter to begin sending information. Meanwhile, the output of the receiver at R has been shifted over to a place to store the incoming information.

This "information" consists of a normal teletype code in which each character is represented by a start pulse, five information pulses, and a stop pulse. Originally, it was typed onto paper tape at T at the standard speed of 60 w.p.m. using a standard machine. This tape then went into a high-speed reader which, during transmission intervals, spat the material into the fsk transmitter at 600 w.p.m. -- 10 times normal speed. After reception at R, the information has to be stored, at the high speed at which it comes in, and then read off at normal speed. This is accomplished with either magnetic tape or a system of magnetic cores.

The tape scheme is rather more understandable to most of us. Briefly, the signal, in the form of an on-off modulated 13-kc. carrier, is recorded at 48 inches per second on a continuous loop of tape. This loop runs through two tape heads and drive systems, and a storage bin. The first tape head does the high-speed recording, as well as the erasing. Then the tape feeds into the storage bin. Finally, it runs out and through a second tape head at only 4.8 inches per second. This reduces the 13-kc. carrier to 1300 c.p.s., and converts the teletype information back down to the standard 60 w.p.m. Now it can be fed to standard printing equipment.

The voice system works just about the same way, except that magnetic tape is used as the storage element at T, also. The message is recorded with a microphone on a tape loop, which is then played back at five times the original speed into an SSB transmitter. The received signal is recorded at high speed as in the case with teletype, and played back at normal speed into a loudspeaker. Link control circuits are almost identical with the teletype arrangement.

Some readers might wonder whether simple reception of any signal from R at T could not be used to start transmission of information at T. Since meteor scatter signals follow reciprocity laws, this ought to work, and might well be satisfactory for a simple system. However, the closed loop scheme described does offer the advantage of controlling information transmission by the actual signal to noise ratio at the receiving site. It goes almost without saying that our brief description has neglected many system refinements. Some of these reduce information loss due to the fast fade rates encountered with bursts (up to 500 db per second) and due to lack of storage space or malfunction at the receiving end.

At this point, it is only right to inquire whether such techniques as have been described have any amateur applications. The writer thinks that perhaps they may. Up to now, the finest fruits of the meteor scatter tree have been more or less restricted to those stations having fairly high power and a knack for c.w. Sure, you can work MS with 100 watts at 10 w.p.m., but it would be more rewarding with 500 watts and a 30 w.p.m. fist!

Possibly closed link techniques offer a chance to the fellow who doesn't exactly love high-speed c.w., and prefers to work with equipment. Things do get a little complicated, of course, if we try to go all the way, but perhaps we could start out in easy stages. For example, we could utilize normal speed transmissions, but only transmit when the path is open. This would eliminate the need for two tape recorders or any similar scheme for switching transmission and reading speeds, but would get away from the timed transmitting periods and continuous bug-work now required. If opposite ends of the six-

meter band were too close to eliminate interference from one's own continuously operrating recognition-signal transmitter, than one end of the circuit could use 28 Mc. and the other 50. This ought to work a good bit of the time, anyway. Or, if you are trying to work someone in or near a city with a low-band v.h.f. TV station, its carrier could be used to trigger your own ham band transmissions. All it would take would be a suitable threshold adjustment.

What say, who wants to set up the first amateur meteor-burst SYSTEM?

A REPORT ON YOUR REPORTS

by Constance Campbell, W1CIE

Two Meter News

The second half of January on 2 meters rolled along much the same as the first two weeks of the month, with a couple of good auroral openings reported on the evenings of the 17th and 20th and scattered auroral work on various other dates. The openings on the 17th and 20th were experienced in the northeast and northcentral states but didn't extend very far south. The most southerly stations we could find participating were located in Virginia. Auroral work was also quite heavy on the evening of February 4th.

However, let's give some attention to the aurora that really deserves it - the February 10th affair. This was a magnificent visual display with widespread showing. Even aurora-hardened New Englanders gasped at its range and beauty. 2 meter men weren't out gazing at it, however. They were busy in their shacks with one of the best openings yet on their hands. It started on the evening of the 10th and lasted well into the next day. Some hardy souls stuck by their rigs until three and four in the morning. Auroral work was still going on at 0600 EST on the 11th when quick checks of the band were made by those who were heading for work. This one was definitely a southerly opening, by the way. W5LFG, Miss., W5JWL, Ark., W5PZ, Okla., were heard and worked in the New England area and in W8 and 9-land. And February 10th was a Regular World Day, too!

Note!

W2ZKE sends us word that the MUF was really getting up there. On January 19th at 1054 EST he heard what he was sure were signals from G3EHY on 70 Mc.

6 Meter Doings

January 26th is the day that really caught our eye! The first USA-Aruba contact that we know about took place at 0940 CST on this date. It was reported by both parties concerned, PJ2AO and W9DSP. PJ2AO and PJ2AF were heard throughout the northeast and central states at this time. The band also opened up between the east coast and Europe, and the east and west coasts. PZ1AE and HC1FS were heard in many states. Back scatter was a-plenty, too!

We received word of a Hawaii-east coast opening from KH6UK who received the sigs of W1CLS and W1CLH on January 25th. The band really swung into action between these two points on the 31st, however, and numerous contacts were made. On the 23rd at 1733-1755 EST, K4IJG in Tennessee heard KM6AL on Midway Island for another similar F2 contact. MUF from Europe held up quite well: G2BVN reported his QSO with W5VY which took place on the 26th at 1610 GMT.

223

K6RNQ tells us that the band was open for F2 to Florida, Cuba and Guatemala on many days from his location. It was quite obvious from your reports that the Washington-Oregon-California area experienced good F2 paths to Cuba on the 17th, 22nd and 24th of January. The band was open for F2 in one or more directions on 29 days out of 31, said W6BJI, and we'll add that we noticed an almost complete lack of any F2 activity on the 18th and 27th. This lack, by the way, appeared to affect almost all areas.

224 223

There were very sizable Sporadic-E openings, too, mainly on the 15th about 2300-2400 EST between Florida and New England. On the evening of the 23rd, there was another good opening between these two points. On January 17th, the southeast fared well with an E opening to Texas and Oklahoma. This occurred about 2000 to 2300 EST. The west coast wasn't ignored, either, for the band was also open from California to Colorado, Nebraska and Texas on the 17th from 1900 to 2200 PST.

Northern states got in some auroral work on the evening of the 20th. One auroral (?) contact took place at noon on this date between W4IKK, Tennessee, and W7RUX, Phoenix, Arizona. W4IKK's beam was due north but the received signal was readable 20° either side. It sounded exactly like aurora to him, but he wondered whether the closing of the F2 opening might have something to do with it.

LU3EX and LU7AT kept us informed of TE doings for this period. CT3AE, KP4ABK, TG9JW, and JA3JJ came through at their locations on various evenings during the month. We have at least one TE report for practically every evening, thanks to their efforts.

On Into February

197

Hawaii-east coast contacts are ordinary events now judging by your reports. Quite a few of these QSOs took place on February 1st around 1500 EST. W1PHR worked KH6UK and KH6NS, and was hearing W6s at the same time. The Hawaii signals didn't extend much beyond Vermont, however, because W1QCC/VE1 in Pictou, N.S., heard only W6s and W7s at this time. Californians worked KH6s and W1s simultaneously on F2 on February 1st and their nearby neighbors and W7s were coming through on back scatter. Around 1530 PST (still on the 1st) K6RNQ worked ZL4GY in New Zealand. It's the first time that we have come across this particular path on any of your reports. K6RNQ repeated the performance on the 7th when he worked ZL2ABX at 1615 PST.

252 260

A little later in the month, on February 8th 1800-2000 EST, a Sporadic-E opening came to our attention. It produced QSOs between hams in Florida, Texas, Arizona, and TG9JW, XE1GE, and XE1PY. On February 10th around 1800 CST there was another notable E opening between Texas and the Florida-Cuba area.

233

Of course, there was the increase of auroral work corresponding with activity on 2 meters on February 10th. This opening on 6 was characterized by a brief E opening before the aurora really took over. In fact, for a while there, contacts between east coast stations and W0s were a mixture of both types. VE4DI, Manitoba, was heard often by W1s and W2s during this E-A opening and probably gave a lot of hams a new Canadian province to add to their lists. It seemed to us that the February 10th opening fared much better on 2 meters than on 6, however. The 50 Mc. W8s, 9s and 0s didn't appear to have as many auroral contacts and heard reports to submit as their counterparts on the higher frequency; the W9s reported that the auroral signals during this opening seemed to be steadier than usual. The six-meter W7s worked aurora during this time but mostly among themselves and the W6s. Only a very few W0 signals came through to the northwest.

As a whole, although the W7s bemoaned the lack of real aurora DX they get along quite well during the beginning of February. F2 paths to the east coast, Hawaii and Japan were frequent and they had a dash of Sporadic-E on the evening of the 9th that brought in some Californian signals.

235

Let's not forget to mention how the TE came along in February, by all means! Not many reports have come in as yet, but we can say that TE paths were open between Argentina and Madeira Islands, Guatemala, Mexico, Ecuador, Puerto Rico during many evenings. LU7AT sent in the report that informed us of these openings. VQ2PL heard CT1CO in Portugal at 1900 GMT on February 6th for the first example of this TE path that we have noticed.

255 1[illegible]

Here's a very recent report received from W4HHK via postcard. On February 23rd at 0844 CST he worked ZE2JV, Southern Rhodesia from his home QTH in Collierville, Tenn. A few minutes later, from his portable location, he again worked ZE2JV, logged ZE2KM, and worked VQ2PL in Northern Rhodesia at 0926. Paul reports that they were all good, strong phone signals and that he received 599x reports from them. This is the first example to come to our attention of a morning opening between the U.S. and Africa. Although this is the time one would expect F2 ionization to be at its peak, previous work has been done in the afternoon (U.S. time). Since this means evening in Africa, we feel that former openings have, perhaps, been a combination of TE and F2. That old geomagnetic equator again!

191 We almost missed noticing this heard report, tucked away as it was in the middle of some ordinary F2. K6GTG reports that he heard EL2A in Monrovia, Liberia at 1223 PST, January 28th. This would be 1939 GMT in Monrovia which is directly on the geomagnetic equator, according to our maps here. A few minutes later, K6GTG thought he heard a ZS coming in but was unable to pull the signal through for identification.

MORNING NORTH-SOUTH OPENINGS -- WITH AND WITHOUT FLUTTER

No doubt a few sharp-eyed readers have wondered why the above article contained nary a mention of the recent openings between the U.S. (and Canada) and South America. The answer is that we feel they deserve a few paragraphs of their own. First of all, there have been the conventional F2 openings to PZ, PJ, etc., similar to those most of us remember from last year. But -- something new has been added. There have been numerous openings to Chile and Peru, as well as Argentina, which featured signals sounding just like our nocturnal friend, TE. That is, their fading is really a flutter, as opposed to a slow fade or nearly none at all. What has shown up this sort of thing is the N.B.S. network of IGY stations (see last month's "News"). These are going to be real blessings, it seems!

261 268 267 265 277 295

During the first half of January, CE8AE, Antofagasta, Chile, and OA3AEE, Arequipa, Peru, were heard by W3OJU, W5FXN, W5LIU, and W4UMF. Reception was reported for the mornings of January 1, 2, 3, 4, 11, and 12. CE8AE was even coming through up in Ottawa, Canada. VE3AGU heard its A0 signal on January 1, 11, and 12. Some of these observers reported flutter, while others did not. Let us underline right here and now that it is extremely important for you to indicate flutter whenever it is present. Whether or not there is an "F" alongside that signal report can sometimes make quite a difference in what we do with our observations.

213 269 301 283 241

During the second half of January, CE8AE came through at W3OJU on the 16th, 17th, 19th, and 26. W4IKK picked up the fluttering signals on the 23rd and 25th, and W4RMU heard both CE8AE and OA3AAE on January 16, 17, 19, 21 (no flutter), 23, 25, 26 and 30. Notable by their absence, perhaps, were any west coast heard reports on these signals. 183 223

212 242 236 228 214 212

Not so for the first half of February. W6AJF heard CE8AE and OA3AAE between 1000 and 1230 PST on the 14th. K6RNQ picked them up on the 5th, 9th, 12th, 13th, and 14th. On 252 February 5, Bob even managed to work LU7AT at 1000. Working our way eastward, W5LIU, W5MJD, and W5SFW all filed reports listing CE8AE. W5FEG also heard what appears to be this station between 1410 and 1700 on the afternoon of February 12. The signal was first heard about S8 with flutter; it then built up to a steady 40 db over S9, and faded, gaining flutter, back into the noise. The same signal (at the same time) was picked up by W4RMU and W4HHK. Both of these stations listed fluttery reception "with a hollow sound" on various mornings. So did W4IKK. K2ITQ/3 (at college in Pennsylvania) heard LU9MA coming in S3 on the morning of the 6th.

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W4UMF had the good fortune to be monitoring six on the morning of February 9. He heard (among other things) CE8AE coming in a steady S2 at 0815. At 0915, the noise level rose some 20-30 db (an SID), and CE8AE picked up the TE flutter. At 1000, with the h.f. bands dead up through 28 Mc., CE8AE was still coming through, and still had flutter. By 1130, the noise level was back to normal, and the flutter was gone. This SID, of course, presaged the wonderful February 10 aurora by just 36 hours. To the south a bit, XE1GE has been picking up the IGY stations almost every morning from 0800-0900 CST, and again between 2100 and 2200 in the evening. LU1ABF was worked at 1145 on the 5th for his first such contact of the year. We can hardly wait to see what we'll be writing next month about two more reporting periods!

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CERTIFICATE WINNERS

Once again, we extend hearty congratulations to a new group of observers who have earned the PRP Consistent Reporting Award. Here are this month's winners:

W1QQC/VE1
K2HPN
W2ORA
K5CYK
W5LIU
W6JAM
W6RLB
W7GWB
K8BYQ
K8DWX
W8WRN
W9FEM
G2BVN
G3FIJ
SWLF4
KL7CDG
LA7Y
VE7AQQ
ZS5HV

SPUTNIKS AND EXPLORERS

Our PRP Headquarters mail still contains a small number of requests for information about satellite tracking, as well as reports and comments about signals received on 20, 40, and 108 Mc. Interesting as this material is, the fact remains that satellites are not exactly our field at 530 Silas Deane Highway. For this reason, we feel compelled to refer you to the best sources of information. In most cases, this will be QST. All the news coming into ARRL on this subject is gotten into print just as soon as possible. If time is of essance, a W1AW bulletin goes out also. For an example of what we mean, be sure and look at page 32 in QST for March. There's word there of an observing program which you may want to join. And -- if you have a question which QST does not answer, or have observed something of unusual interest, your letter will be handled more promptly if sent to ARRL, Atten: George Grammer, than if it is sent to this office. That's because we would very likely have to ask George before we could answer you!

NEWS AND NOTES

Crusing Down The Volga

Vic, K5DCQ, came through with the following recently, and we thought we'd just leave it in his words: "Talked to W5ERG in Dallas night before last. Walt said he had received a QSL "heard" card from UA9KCK who was evidently maritime mobile on the Volga River. His address on the card said Sverdlovsk, Russia. The Russian had given Walt a 549 report. Time was 0725 MSK, 16th December, 1957. Now, if this is all for real, we experienced an E-type band opening the evening of December 16th (I was at the YL's QTH). 0725 MSK should have been 2025 CST. Well -- I don't know if Walt was on c.w. or not, but, at 2025 the band was probably closing, and he may have switched to c.w. to make contacts. Band had been open

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at the last to Iowa, Minn., Wisc., etc., and by great circle route on the ARRL World Map his beam would have been heading directly towards Sverdlovsk. Now -- I wonder -- and I quote "Radio communication at v.h.f. is very difficult via transpolar route" unquote -- was there any evidence of auroral activity on this evening (Not according to the PRP reports), and why a double-F or what type of propagation was it? 6000 miles transpolar seems unusual this time of night, etc., etc."

Sure does, Vic, and we print this not so much in the belief that it happened, but, if it did, remember where you saw it first!

"What Is It" Of The Month

Norm, W1UHE, of North Tiverton, Rhode Island, is one of our most faithful 220-Mc. observers. He'd like to know whether anyone has information concerning a signal on 220.000 plus or minus 2 cycles (as measured with Lampkin meter) which is on for 10 seconds and then off for 20 seconds. The signal is crystal-controlled, and the timing mentioned is very accurate. Strength varies between S1 and S7 with occasional auroral effect. Norm's antenna must be pointed along the east coast of Maine towards Nova Scotia for best results. Anybody know what it is?

More 220-Mc. News

William Locy, K6GTG, of Arlington, California, writes that he is now on 220 in a big way -- with 88 elements 70 feet up and one kilowatt of power. Operating frequency is 221.5 Mc. Bill also extends an invitation for anyone interested in DX schedules to get in touch with him. Local activity is reported good with about 120 stations on in Los Angeles county and 10 in Riverside county. That sure sounds wonderful to us in Connecticut!

K6GTG will begin automatic keying on 220 approximately March 15 using the above frequency, and A1 emission. Times will be 0100-0600 beaming east, and 0601-0700 north. The days will be Monday through Saturday, with no Sunday transmissions. Vertical polarization will be used during March, and horizontal during April. Give a listen!

Tough Luck

The past winter has been none too kind to v.h.f. men in Connecticut (and no doubt some other places, also). Combined wind and ice accounted for both towers at W1HDQ during past weeks, and left Ed with but a chimney-mounted 50-Mc. yagi. Down in the "southern" part of the state, our faithful beacon operator, W1REZ, lost his 54-element 2-meter array and the top section of his tower. If all goes well, Ray hopes to have a 64-element collinear up by April 1st for the start of the meteor season. With it on the tower, will be a 416B preamp with a noise figure of about 1.2 db. Then, as Ray says, "that's it!"

Our closing paragraph this month might be a good spot to comment on a question which has been asked recently by a number of observers. This is: "Do we need to try and report all stations we hear, or is a sample list good enough?" Our answer has been that a representative sampling is quite satisfactory, so long as it includes enough stations to give a good idea of the locations and signal strengths involved. As a matter of fact, a good sample list, including exact times, quality reports, and bearings where necessary, is more useful than a long list which includes just a few times, for example. Of course, we definitely want to hear about all your two-way contacts but, keeping the "sample" idea in mind for heard reports....may help that case of writer's cramp during a really big opening!

See you next month.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 16 APRIL, 1958

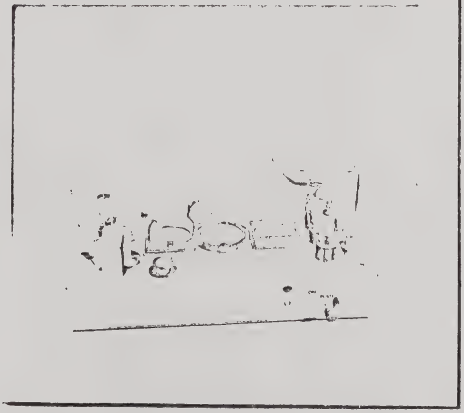
THIS MONTH:

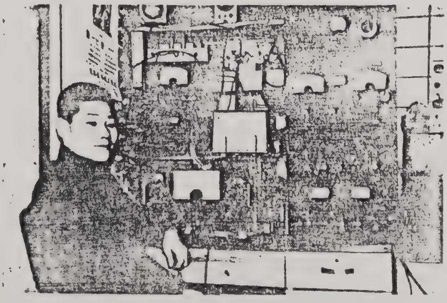
AURORAL ODDITIES, PROPAGATION REVIEW

PLUS - LOTS OF NOTES AND QUOTES

W4FJ's Beacon Rig

Shown below is a neatly modified version of the W1VLH linear amplifier described in QST for February, 1957. It was built by Ted Mathewson, W4FJ, for his regular operating and beacon transmissions on 144.175 Mc. This is a two meters-only model, the plate tank being enclosed in a permanent box. Grid tuning and link adjustments are on the rear edge of the bottom chassis. A 4CX300A tube replaces the original 4X250B. The SK-700 socket screen bypass proved ineffective (much to the chagrin of the original screen meter) and had to be supplemented with conventional capacitors.





ABOVE: John Smith, W5EXZ, of San Antonio, Texas. The 50-Mc. rig runs up to one kw. to a pair of 4-125As. A new 6J4 grounded grid converter and NC-300 take care of the receiving. Antenna is a 4/4.

RADIO REFERENCE MAP

ABOVE: Another well-known six-meter operator, Gus Pellon, CO2ZX. An International Crystal converter-BC-455 combination and Tecraft transmitter are used on 50 Mc. The Ranger is being used for lining up schedules. Gus is especially interested in working western states. Look for him around 28.3 Mc. 1030-1300 EST and also 1700-1830. You'll also find him on 50.4 when six is open. Photo by CO2QR.

LEFT: Hisashi Hashimoto, JA8FY, of Hokkaido, Japan. All of that nice-looking equipment is home-constructed.

RADIO OBSERVATION OF METEORS

Thought you might be interested in how some amateur astronomers are using amateur radio techniques to study meteors. Our source is a fascinating little periodical called "The Great Plains Observer". Although tailored to the great plains area, we heartily recommend this publication to all those interested in aurora, meteors, and plain old star gazing. There are six issues a year, and the cost is a mere dollar. Write to Walter Scott Houston, Route 3, Manhattan, Kansas for particulars.

Houston and a PRP observer, Cliff Simpson, W0YUQ, are the principals behind this meteor counting project. It seems that astronomers usually count meteors by simply watching for them, a process which sounds rather hard on the eyes to this writer. Why not make use of ham-type meteor scatter techniques, they thought. After all, you get pings on a meteor burst circuit, and each ping is a meteor. The resulting setup makes use of old faithful KA2XBA in Cedar Rapids, Iowa, on 49.8 Mc. Normally its signal cannot be heard in Manhattan, Kansas, but the meteor pings come through perfectly.

The receiving antenna used is a hand-rotated four-element yagi 10 feet above ground. This feeds a crystal-controlled receiving combination consisting of a simple converter and a converted surplus 7-Mc. i.f. unit. The receiver has a squelch system that will turn the speaker on only when a signal louder than the set noise comes through. A BFO is employed. The counter is a standard unit reading to 9999. Current from the speaker line operates a relay which controls the current to the actual counter. A three-second delay is built into the counter circuit to prevent long duration, warbling echoes from counting more than once. Of course, there are problems. Lighting strokes and light switches cause the system to count. Sporadic-E periods keep the relay closed. A slow-running drum recorder is planned to indicate those periods when the counter is out of action.

By observing near the horizon in the direction of Cedar Rapids, it is possible to see meteors at the same time they are heard. Furthermore, the visible ones correspond to the very strong pings, so the radio is counting meteors which could not be spotted with the naked eye -- probably as low as 6-9th magnitude. Aurora can also be detected by this process. When the northern lights are active, meteors can be heard with the antenna turned north. The signal apparently bounces off the meteor trail as it goes north; then the aurora reflects it back to the receiver.

AURORAL ODDITIES

Over The Pole?

Just missing last month's bulletin came the startling news that JA7EV picked up a W8??? between 2254 and 2300 JST. Not only that, but his antenna was aimed north to north-north-west, the signal was coming in 3F, and the above time interval corresponds to 0754-0800 EST on February 11. This, as most of you will remember, was the time of the big aurora observed all over the U.S.A. Question now is, how did that signal get from W8-land to Japan?

On 220 Mc.?

K6GTG also had an interesting auroral possibility to report during February. On the 23rd, at about 1856 PST, in came signals (quality 1F, antenna north) from W8E??. This station "was in for about 45 seconds calling CQ DX on c.w., but went into a fade on the call. (Don't they always? Ed.) If there is any way to find out who it was, would like to know." So would we!

A LOOK AT YOUR REPORTS

by Constance Campbell, W1CIE

Six Meter DX During February 16-28

One of the first things we noticed about six meter activity during February 16-28 was that openings were very selective as to the geographical locations that they affected. Because of this, we're going to give you this usual resmue broken down into areas.

First, let's take a look at the W1-2-3 section. Activity started out during the period with a very strong F2 opening to California at noon time on February 16th. The mornings of the 19th and 20th brought in signals from HC1JW in Ecuador and backscatter signals from the southeast. On February 21st, W1QCC/VE1 got in on a good noon opening to W6s and W7s.

15

174 173 175

177

It was on the 22nd that things really began to pop. African stations (ZE2JV, ZE2KL, ZS3G, ZS9G, VQ2PL) started coming in around 0840 EST and were accompained by backscatter signals from the southeast and a noontime opening to W-6 land. On the 23rd XE1PY, 155 XE1GE, TG9JW, PZ1AE, PJ2AF were widely heard through-out this section of the U.S. VE1EF and W1LGE both had good luck with reception of CT1CO around 0900 EST on February 28th.

The W4s faired much the same during this period with a good opening to Africa on the 23rd. Our southeast observers had a great many reports of reception of those South American beacons to send in to us. W4IKK and W4RMU's reports listed reception during many mornings and evenings. We'll have more to say about these beacons later on.

176 177 178

W5s experienced a Sporadic-E opening to California on the 18th around 1800 CST. They had good luck with African stations on the 21st, 22nd and 23rd, too. The 23rd F2 opening also brought in such signals as KP4ABN, KP4ACH and FS7RT around 0935 MST, and KH6 stations started booming in later in the afternoon. W5LFM/KL7 called our attention to the absence of any KL7 openings. We couldn't find a single report of one, either.

174

Take a look at what happened in California during this period! On the 19th ZL-W6 QSOs started to take place, mixed in with a lot of backscatter and KH6 sigs. New Zealand reception continued again on the 22nd from around noon until 1400 PST. But here are some localities of stations worked by W6s on the 23rd: the east coast, New Zealand, Puerto Rico, Panama, Hawaii, Africa, Jamaica, Guatemala, Madeira Islands, Canal Zone, Cuba, Tahiti, Australia. How's that for DX?

185 178 174

195 The W7s had short openings to Hawaii during afternoons of the 17th, 18th, and 19th. On the 23rd, the band was open to Florida and TG9JW. W7INX reported that he heard LU2FCD on February 28th at 0840 PST. The LU2 rated a 5 signal strength.

176 177 195 173

W8 and W9 stations were in on the opening to HC1JW's location on February 20th, as well as the African openings on the 21st and 22nd. PZ1AE, PJ2AO, PJ2AF, KP4ABN accounted for many QSOs in this area on the morning of the 23rd. Our W0 observers sent in reports of contacts with African stations on the 21st, 22nd, and 23rd. On the 23rd, they also had their share of signals from Puerto Rico, Aruba, and Hawaii later in the afternoon. K0JNH reported reception of ZP3EE, Paraguay, and HK1FS, Columbia, at 1110 CST on the 22nd.

TE work was carried on in great amount during February, also. LU7AT heard stations in the Madeira Islands, Puerto Rico, and Jamaica on the evening of the 19th. XE1GE was succesful with TE work into LU- and CE-lands on the 23rd, 24th, 25th, and 28th. Australian signals were heard by JA2GR on almost every date during this period, either via F2 in the mornings or by TE at night. Down in Montevideo, Uruguay, CX1AQ heard PZ1AE, VP5RS, XE1GE around 2300 on February 23rd. He repeated this TE work on the evenings of the 24th, 25th, and 26th. 206 195 [illegible]

Those N.B.S. beacon stations in South America kept on coming through morning, afternoon, and evening with considerable consistency. Remarks from W4FNR and W4IKK led us to notice that when these beacons were being received with a steady F2-type signal, OA3AAF (the low-powered one) usually came through just about as well as OA3AAE and CE8AE. As soon as the beacons took on that TE flutter, OA3AAF dropped out. W6BJI has observed that 28-Mc. South American signals are usually absent when the N.B.S. beacons are coming through on TE. When the TE is absent, the 28-Mc. sigs are good to excellent if the band is open that way.

The period also saw the first 50-Mc. work between India and another country. Aravind, VU2EJ, of Poona made contact (crossband 6/10) with Abe, 4X4IX. This was February 28th at exactly 1200 GMT. Work was carried on for about 20 minutes. A cubical quad antenna and 25-watt 807 rig were used at VU2EJ.

What Happened During March?

A good, strong, summer-type Sporadic-E opening was one of the very noticable events that took place during March 1-15. This opening occurred on the evening of the 15th and lasted for quite a few hours. W5, 6s, 7s, and W0s got in on this activity. 218

130 204 224

Auroral work was possible during late afternoon and evening of the 3rd, during the evening of March 11th and the late hours of the 15th. These were the chief openings but we received reports of small ones on other evenings, too. These three main openings affected only the northern part of the U.S. and even the W7s got in some flutter work during the display on the 11th.

ZL signals continued to stream into the California area during most of this period and we have reports of this W6-ZL work for practically every day. The New Zealand stations

seemed to reach farther to the north than they did in February and Washington and Oregon hams got a chance at some QSOs. F2 openings from east to west coasts took place on the 1st and 2nd of March; W5s and W6s contacted Hawaii on the 3rd and 5th of this month.

224 234

HC1JW is probably a very familiar call to many of you by this time. It would be impossible to list the number of days that his signals were received all over the U.S. but you can take our word for it that it was a goodly number. F2 openings also brought in a lot of LUs and CEs, and the day that caught our eye was March 12th. W6s, 8s, 9s, and WØ's had a good opportunity for South American QSOs on this day. Most of the openings to S.A. during this period were accompained by reception of backscatter signals from the southeast.

218 233

We have a great many reports of TE work in our file for March and here are some examples: W7FYC heard signals of VK4NZ on March 15th around 2150 MST. VK4HD and W6AJF had a March 15th QSO about this same time. On the 11th, K4RFM worked LU3EX and LU9MA at 0142 GMT. He had TE QSOs with OA4C and CE3CT on the 12th and 14th about 0300 GMT. LU9MA came through to W4GJO at 2000 EST on March 10th.

236 233 228

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TG9JW wrote us: "The LUs have been coming in in fine style late at night. I had a one hour solid QSO with LU4DFN on March 2nd. S9 plus sigs on both ends... The band has been so active that QSLs are now a problem. Not enough time to fill them out." Our Hong Kong observer, George, VS6CJ tells us that after much patience and tuning, he finally caught two good E openings into Japan. These were on the 1st and 11th of March and sigs were up to S9, 100% readability. He reports that conditions were rather localized, however. The March 1 opening brought in JA3s almost exclusively; the 11th path was a bit wider and JA2, JA3, and JA5 areas were contacted.

215 209 211 221 225

From our far-flung observer, JA8EU, comes an early release that he was successful with F2 work on March 16th with ZLs, on March 17th, 18th, 19th, 21st with Australian stations, and on March 20th with KX6AF in the Marshall Islands.

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Two Meter Report

We'd like nothing better than to report that 144 Mc. was swarming with activity, but such was not the case. We really don't have too much to write about in this section. W1OAX, W2LWI, W2ORI, W2RXG caught very short auroral openings during the second half of February but not very many contacts resulted. VE2FF, W9KLR, W8EHW, and W8KAY had a little bit of luck, mostly on the 16th, 17th, 18th, and 20th of February. We looked up our report for last year at this time and found that the two didn't compare too favorably. February, 1957, produced very good A openings on the 23rd and 24th.

However, activity picked up during March and good A paths were reported for the 3rd and 11th. The W8s got in a lot of activity on March 13th between approximately 0030 - 0154 EST. Short openings on the 10th, 12th, and 15th were also observed. It looks as though conditions might be picking up. Let's hope so!

144-Mc. Transatlantic Tests

The information for this item came to us the long way 'round; PRP observer Walt Morrison, W2CXY, came up with the idea, sent it off to the Radio Society of Great Britain, and we read about it in the March, 1958 RSGB Bulletin. Walt feels that neither meteor nor auroral propagation look too good for accomplishing that dream of two-meter operators, a transatlantic contact. He believes that three possibilities remain -- ionospheric scatter under conditions of intense F2 layer ionization, moon bounce or tropospheric propagation. Whatever the mode of propagation, then, the signals, if there at all, will be extremely weak. Obviously an emulation of the W6NLZ-KH6UK effort is called for, making use of the best possible equipment.

W2CXY will operate on 14.095 Mc. and 144.01 Mc. simultaneously transmitting "IGY TEST IGY TEST IGY TEST DUAL 14095/144010 DE W2CXY" at about 20 w.p.m. for five minutes commencing at 1330, 1900 and 0300 GMT (0830, 1400 and 2200 EST) on Saturdays and Sundays and at 2330 GMT (1830 EST) Mondays to Fridays. The five-minute transmission period will alternate with similar listening periods on both bands.

Equipment to be used by W2CXY includes a Collins KWS-1K running 1 kw. to a ground plane on 14 Mc. For 144 Mc., the transmitter comprises a modified SCR522 driving push-pull 4-125As also running 1 kw. input and feeding a 40-element array consisting of four 16 ft. long yagis spaced 12 ft. by 12 ft. on a 70-ft. tower. A new coaxial final using an Eimac 4CX1000A tunable from 60 to 450 Mc. will be completed soon. The station is 350 ft. above sea level with a relatively clear path to the Atlantic 20 miles northeast of Chatham, New Jersey. Best of luck Walt!

W3YHI's DEUTSCHLAND DOINGS

Received a lengthy letter this week from an old friend to many of the two-meter gang throughout the eastern U.S. We're speaking of Jack Drummond, W3YHI, late cf Washington, D.C. Jack is now DL4WW in Ramstein, Germany. One of the 144-Mc. s.s.b. pioneers in this country, he is wasting no time in spreading the word around over there. Several DLs are working on heterodyne units, and DL3NQ has built a phasing system with 6J6s operating on 144 Mc.

Of special interest is the fact that the entire W3YHI station has been transplanted to Germany, and is now operating with a full 500 watts input both c.w. and s.s.b. The gear was picked up in Washington last August, and had nearly been given up for lost when it was discovered that someone had lost the paper work and delivery to New York City hadn't been till early February. Three weeks later it was delivered, via commercial freighter to Rotterdam, a barge down the Rhine to Mannheim, and a German moving van to Ramstein. An interesting (!) note is that Jack had meanwhile overhauled a BC-640 and carried its 600 pounds up three flights of stairs to his apartment. Thirty minutes later, the phone rang. His W3YHI rig was in Mannheim, and would be delivered in three days!

DL4WW's next project is to get his 13-element yagi erected. This means figuring out a way to mount it (without drilling any holes) atop a flat roof that has no chimneys or other anchor points. There've been other problems, too. Fast-working room circuit breakers threw every time he turned on the high voltage. Good old TVI with strip-converted German receivers had to be worked out (in the midst of a tremendous GI housing area), but W3YHI/DL4WW rides again. Furthermore, he's listening for you on two meters!

THIS MONTH'S CERTIFICATE WINNERS

Listed below are the new additions to our Consistent Reporting Award honor roll. Lots cf endorsement stickers are being sent out these days also. Congratulations all!

K2LVA
K4KSM
K5EBZ
K6TUU
W7GRA
W8MAH
LA9T
ZS1LA

NEWS AND NOTES

TV On Two Meters

The following news from Karl-Eric Nord, SM5MN: "We have an intruder in our 144-Mc. band here in Europe, and indeed a powerful one: the TV transmitter in Karl Marxstadt (formerly Dresden) on 145.25 Mc. -- antenna power: 100 kw. It is of some use to us amateurs, though, as a powerful beacon, especially when aurora openings are coming."

From India...

Interested in getting on six as soon as possible is VU2EJ of Bombay. Ken has just acquired an SCR-522AM for conversion, but it needs some parts which aren't, it seems, easy to come by in India. Most important, he would like a circuit diagram or booklet on the 522. Does anyone have one they could spare or loan? Also, some of the parts needed include: 832 tube, 0-1 Ma. meter, crystals (not for 50.1 Mc.), 12A6 tube. Help would be appreciated.

... And Malaya

We also had word this month from another isolated observer who is doing his best to keep an eye on 50 Mc. He is VS2DQ of Malaya. Japanese stations have been received almost daily, he reports, between 0930 and 1100 local time. Calls so far identified include JA3CE, JA5EB and JA5IX. Attempts to contact them have not so far been successful. No signals at all have been received during the afternoon and evening hours. Let us hope that the equinox period will bring some results!

Transcon Ragchewing

Lisle Hines, K2QLA, sent us an interesting note recently telling of four rather special contacts with W7REV of Portland, Oregon. It seems that these two grew up on the same street in Cortland, N.Y., where Lisle still lives. A year ago, W7REV came home for a visit, and K2QLA talked him into doing something with his never-used Technician license. This year, they finally got together via six meters. Solid contacts were had as follows: Jan. 7, 1252-1325; Jan. 8, 1235-1510; Jan. 9, 1314-1521; Jan. 13, 1151-1315. RCC anyone?

Beacon Business

Ken, W8WRN, of Columbus, Ohio, writes that he has joined W5FHS and the others making

beacon transmissions on 50.55 Mc. No definite schedule, as yet, but keep checking this frequency. There are a fair number of stations using it now, and someday it may even be a better band opening indicator than listening for heterodynes on 50.1!

ZS2PE of Port Elizabeth, South Africa, says that his beacon transmitter is now operating on 50.23 Mc. daily between 1000 and 2000 GMT. Power is 50 watts.

We don't need to tell too many of you about the A3 beacon being operated by K5DCQ of Irving, Texas. You've told us on your reports, though sometimes as K5BCQ, we'll have to admit. This 50.16-Mc. beacon is for Communicators and by a Communicator. Modulation comes from a Wollensak 1500 recorder playing a 75-second endless tape which intones: "K5DCQ near Dallas, Texas, conducting ionospheric propagation tests."

Six-Meter Alarm System

Thought you'd be interested in this item from Win Cooper, W5EMT, of Forrest City, Arkansas. Win is employed by the power company there, his job being maintenance of 2-way radio equipment. He writes: "I have obtained permission from the company to use a 250-foot tower which is located on a 400-foot hill two and one half miles from my house. I have a crystal-controlled receiver at the tower on 51.45 Mc., 24 hours a day, said receiver being carrier operated with the relay circuit feeding d.c. into a leased telephone line to my home. Therefore, when receiving a signal on 51.45 Mc., a visual and audio alarm is activated at home.

"We also have another crystal-controlled receiver in K4GAQ's home in Memphis on 50.5 Mc., making contact possible at all times between Memphis and Forrest City. Frank (K4GAQ) and I use this setup two or three times daily for ragchews and phone patch traffic. These receivers are FM jobs that we obtained, putting them on the six-meter band. K4GAQ and I designed a unique relay circuit for the alarm operations. Tell the boys to point their beams this way on the frequencies mentioned, and if conditions are right, we will hear them!"

Ed Ladd Coming Home

Here's the latest word we have from our roving (points north) reporter, W2IDZ: "I am leaving here tomorrow (2/27/58) for Fairbanks, then to White Horse, Yukon Territory, and then heading home in a couple of days. This has been quite an experience. Have worked 6, 10, 11, 15, 20, 40, and 80 meters from here. Wonder if anyone has ever worked more bands from above the Arctic Circle? Have been on the air from six different locations. Sorry I have not worked more (or heard more) on six. If I had a decent antenna, I think I might have." As many of you know, Ed did provide a considerable number of stations with arctic contacts. These seem to have been in demand, too, for his logs show lots of entries in the "Worked" column with little time for stations "Heard"!

Regular World Days

First, our sincere apologies for having omitted the RWD dates last month. Many of you have been very cooperative about being active on these days, and it's at least up to us to tell you when they are. From now on, we'll list them a few months in advance for the benefit of overseas observers who receive their bulletins somewhat late.

Here are the RWDs: April 18, 19, 20; May 5, 18, 19; June 9, 17, 18, 24; July 16, 17, 27. Days for which unusual meteoric activity is expected are: May 5, 18, 19; June 8, 9, 10; July 4, 27. In addition, the IGY calendar shows April 19, May 18, June 17 and July 16 as new moon days, and lists a total eclipse for April 19.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

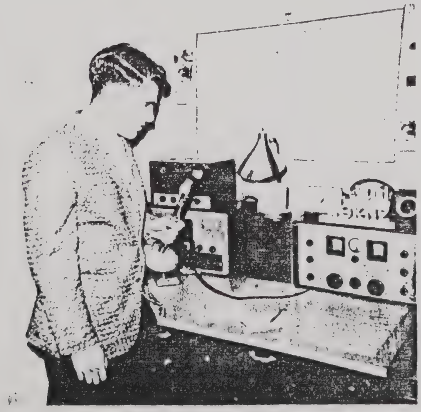
NUMBER 18 JUNE, 1958

THIS MONTH:

YOU ASKED FOR IT — PROPAGATION CALENDAR

TO BE CONTINUED BY POPULAR REQUEST

ABOVE: John McGovern, K0MSS, of Omaha, Nebraska, at the mike of his 50-Mc. station. "Mack" uses a Viking Ranger 6N2 combination, an SX-71 with 6BQ7 preamp, and a 5-element HiGain beam. He's now got a PRP award to fill that wall, we're happy to say. BELOW: Another 6N2 setup (nope, we don't sell them) belonging to Jim Zable, W9KNZ, of Sheboygan, Wisconsin. In evidence are an HQ-140X and 50-Mc. Tecraft. Jim, too, has a PRP award.



NEWS FROM VK3

There are at least two reasons why we like to include quotes from our mailbag in the PRP News. We do, of course, want to purvey the interesting facts which much of our mail contains. In addition, we feel that by quoting and bringing someone's feelings directly to you, we can help give v.h.f. enthusiasts in diverse parts of the world a better understanding of the conditions under which some of their fellows operate. What follows was written to W1HDQ by Lance Harding, VK3AHL, of West Brunswick, Victoria, Australia.

"We VK3s have had to fight for our DX -- in that great patience and many long hours of tuning the band are

BELOW: Mickey Mozoomder, VU2CQ, of Bombay, India. Mickey is active on the DX bands and was the first ham in India on v.h.f. Hiding somewhere amongst all that equipment are 50-watt transmitters for 50, 144 and 432 Mc. Crystal-controlled and tunable converters for the various bands work into the HRO receiver.

necessary in this part of the world. We are the most southerly of the states on the mainland, and the small difference of latitude to VK5 and VK6, for instance, appears to make a big difference. Also there is reason to believe that for TE contacts the exact north-south path is generally more favorable. Adelaide (capitol of VK5) and Tokyo, for example, have only one degree longitude difference.

"On February 22nd JAs were heard and worked by a few VK3s around midday. This was the first F2 opening here I know of since we got the band back for IGY. On February 23rd starting at 1115 E. Aust. I heard JA2CX, JA3ADJ, JA3FV and others for about 1/2 hour, mostly about S7 and S8.

"On the 15th of March at 2200 a TE opening to JA occurred. I then worked JA6FR (my first JA for sure) and JA5BU. Others were calling but I could not understand the calls unfortunately (and I was really trying!). This I considered to be not bad considering my five-element yagi at only 20 feet and 18 watts to an 807. On March 16th there was a similar opening but not so good. I raised JA5BU but lost him. On these two days many of the locals made their eagerly awaited first JA contacts on 50 Mc.

"On March 22nd at 1120 I worked VK4WD in Brisbane and at this time JAs appeared (JA3ADJ, JA6FR, JA8GH and others). At the same time a strong FM station on 49.6 Mc. appeared. This we believe to be the "Voice of South Korea". We have learned to use it as a pointer for JAs. But the VK4s were still there at good strength! I worked VK4ZBD and VK4ZGL and then JA2EQ. Then occurred a loud burst of solar noise washing out the whole band. After it settled down JAs came in again and I heard JA6JY and JA4HM and others.

"On April 18th beginning at 2015 JAs came in up to S9 continuing until 2130 and fading thereafter. I worked JA1BTH, JA1BMV, JA4EV, JA5EB, JA1BLV and a couple of other probables (the language problem again). Now at this time of day we have been accustomed to TE but this was steady signals with only slow QSB and all the characteristics of F2 propagation! The MUF during April was predicted to peak at 1200 approximately and from 2015 to 2130 it should have dropped some 20 Mc. The 49.6 Mc. FM was present S8/9 most of the time. This usually occurs with the F2 openings. On the 21st of April at 0930 I heard a burst of solar noise, then VK9BW at S6. At this time VK3ALZ was hearing VK5BC by backscatter -- presumably from the reflecting region between VK3 and VK9. This is not unusual and occurs on most VK9 openings.

"On April 28th VK4s were worked on sporadic-E during a strong opening from 2000 to 2130. A W7 had been heard in VK4 to congratulate himself for working a W6 with only 20 watts! Little did he know, unfortunately. In addition, a couple of W0s were heard from VK4 ragchewing. In this way golden opportunities have been lost here also. I think it is a good plan during prolonged ragchewing to tune the band during overs and thus keep in touch with events. Also many stations who are qualified miss out on not using c.w. on v.h.f. So much could be done.

"On the 10th of May VK6s worked ZLs and JA8, and ZLs worked VK9. This info is from VK6BE who reported previously hearing VU2EJ testing but was unable to make him take notice! On May 12th about 0900 VK3ALZ and VK9BW worked. To VK3ALZ goes the distinction of hearing W6NLZ at Palos Verdes working ZLs. W6NLZ was peaking S5 on c.w. at 1000. Unfortunately VK3ALZ could not raise him, but W6NLZ was heard to call CQ several times. To our knowledge this was the first time an American station has been heard here in Victoria on 50 Mc. His frequency was almost at the band edge. There was another station there but not identified at 50.04.

"One day later VK3ALZ heard weak carriers coming back to his CQ on c.w. but was unable to copy them on phone. He is fairly certain that they were coming across the Pacific. It is to be hoped that when openings occur W/ZL that the W6s etc. look deeply into the noise as W/VK3 has yet to be made to the best of my knowledge."

PROPAGATION CALENDAR

April 16-30 Overall

The second half of April seemed a disappointment to many PRPers. Two-meter observer W2BLV noted: "Another bad aurora month -- certainly not up to normal conditions." Ionospheric and meteor scatterers on both 50 and 144 complained of low burst rates for the Lyrids shower. Said W4IKK, "If the Lyrids are affecting these scatter sigs, then the sigs would indeed be poor without the Lyrids!!" And right and left -- up to the last day of the period at least -- were cries of "Where's the sporadic-E?" Never-the-less, when we got around to checking, at least a little of almost everything turned up. There was a sprinkling of aurora with two particularly good evenings. Sporadic-E raised its head on April 30th for a brief period. There were more openings between the U.S.A. and New Zealand and Australia and the first reception of the South Ameridan IGY beacons "down under" (even if they did almost disappear over north-south paths); there was also more transequatorial scatter. Want more details? Then read on.

The Two-Meter Picture

April 16 - This date and the following one shared the auroral spotlight. Most reports mentioned times between 1750 and 2200 EST, and covered call areas 1, 2, 3, 8, 9, and 0 plus VE3. Between 1950 and 2200, W8PT heard and worked "too many calls to list" from Conn., N.Y., Pa., Ky., Ohio, Ind., Ill., Iowa, Minn., Wisc., and Neb. A bit later on around 2350 EST W1OAX heard W8KAY and W8SFG for the evening's closing report.

April 17 - This was another good one for aurora across the northeastern U.S. with a

[JUNE 58]

tropospheric opening thrown in for good measure. K2GQI, K2RDI, and W8PT all spotted the buzz as early as 1748 EST. Partically everyone reported this opening which extended a bit further south than its predecessor -- W1JSM heard W4AO and W4LTU/4 in Virginia, and W8PT picked up W4HHK from Tennessee. Again the east coast had the privilege of closing up the party with W1JSM and W1OAX both giving final times close to 2350. The latter was working K4EUS right at the end, swung his antenna around to the south, and finished the QSO with a 559 tropo signal. How convenient!

April 18 - This date brought another aurora reaching south to Virginia, but it was quickie (1755 to 1830 EST roughly) and activity was not great. W2LWI heard W1IZY, W2AZL, W4LTU/4, W9EGH and VE3BQN. The most westerly report was from W0HXY in Minnesota who heard several 8s and 9s.

April 23 - Just a trace of "A" with W1MMN reporting flutter on W1REZ at 1809 EST; about 2325 with aurora bright in the sky he picked up VE2FF. That was all except that K0EMQ heard W9ZIH 1F at 2033 CST. A little to the south tropo conditions were splendid. W0TGC mentioned an opening to W4HJQ, and we understand that W4KKU in Miami worked Oklahoma and Louisiana.

April 27 - W2ORI heard K2TKN via aurora at 2138 EST. W8PT reported Iowa and Illinois at 2050-2056 and 2235. W0SMJ noted A on W0IFS's signal between 1955 and 2000 CST.

April 28 - Another brief one as W1MMN heard W1REZ, W1IZY and K2GQI 1825-1845.

April 29 - Scattered auroral reports received from K2GQI, W2ORI, W3GKP, W9KLR and K0EMQ covered the period 1700-2000 EST. Nothing spectacular.

April 30 - Just to make it four evenings running there was another small aurora. Between 1700 and 1745 EST K2GQI worked K2RDI and VE2LI; W2LWI worked W1AZK and heard various 1s and 2s. W1MMN heard W2ALL 1900-1930.

On 50 Mc.

197 April 16 - This could probably be called the "best all round" day of the period. Between 1145 and 1157 PST sporadic-E skip opened up between California and Texas; W5LFQ and W5SFW were heard and worked by K6GTG and K6PHE. A few minutes later (1214 to 1315) it was California to the north. K6EDX worked VE7CN, and W6BJI worked VE7AFB and heard W7CIO. Just about this time F2 opened up to the west and W6AJF, W6BJI, W6PUZ, K6RNQ and K6EDX worked Zls until 1545; the latter, in addition, snagged VK0KT. To the south, XE1GE got in some ZL contacts, too, between 1605 and 1725 his time. TE showed up a little later and ZL1ADP worked JA1, 2, 3, and 6. JA7EV reports a long list of VKs and ZLs between 1712 and 2004 JST. To top off the day, aurora began as early as 1750 EST and continued till around 2100. W1DGA heard W1, 2, 3, 8, 9 and VE3. Down south, W4UMF in Virginia heard all these but the VE. The most westerly report comes from K0IAN in Nebraska who heard K0ADI (N. Dak.). Says he: "Hams east about 50 miles heard Mich., Minn. and the Dakotas; we heard just one call." Apparently the "A" wasn't spent at 2100, either, for W4IKK heard buzz on KA2XBA and WWI as late as 0125 the next morning.

207 April 17 - A bit of everything popped up on this date, too. W5FXN heard CE8AE and OA3AAE coming through during the forenoon, and LU7DAH was worked by both K6EDX and K6PHE. W6-ZL contacts (plus backscatter) continued with ZL1DE, ZL2DS, ZL3AR and ZL3FR some of the stations coming through. Going back to north-south paths, JA7EV heard ZL2DS via F2 at 1310 JST, and then worked VKs on TE between 1721 and 1920. There was TE on the opposite side of the world, also, and XE1GE worked several LUs between 1850 and 2035 CST. LU3EX reports late evening reception of XE1GE and PY6FI. There was even another aurora session between 1830 and 2156 EST, but no very long paths were covered. W1s, 2s and 3s worked each other as did the 3s, 8s and 9s. Illinois seems to have been the western limit.

213 April 18 - W6s and XE1GE continued to work ZL stations during the afternoon, but W5s had a crack at it on this date also. At 1445 CST K5EBZ worked ZL3AR, and between 1420 and 1442 W5FXN worked ZL2DS and ZL3QK. Frequencies as high as 50.5 Mc. were getting through, says K6EDX. There was excellent backscatter from W6 and W7 also. As for north-south work, K6EDX picked up OA3AAE around 1203 Pacific time, and XE1GE notes evening TE contacts with LU and CE. The aurora was way down but not out, and W2NVD was heard by K2CEH and worked by W1DGA between 2014 and 2045 EST.

221 April 19 - Many more contacts between New Zealand and California were reported, and this seems to have been the last day that the Texans were able to get in on the act. Between 1335 and 1505 CST W5FXN/K5ABW heard ZL2DS, ZL3AQ and ZL3AR, and W5VV worked ZL3AR at 1430. W6PUZ was the only U.S. station to report a VK; he worked VK4HD at 1605 PST. JA7EV tells us that the band was open to VK-land between 1449 and 1507 via conventional F2, and also 1752-1824 courtesy the TE mode. Not to be outdone, XE1GE worked LU3EX and other Argentinians 1240-1325 on F and 2010-2055 on TE. A lonely auroral report for the day has W1LGE hearing W1LUN at 1740 Eastern.

226 April 20 - According to reports at hand, this date saw the last April W6-ZL opening as W6PUZ heard ZL1BJ at 1415-1430 PST. ZL1ADP reports working W6s via F2 from 1008 to 1040 his time and VK9XK via Es at 0930. The Japan-Australia path was open 1105-1518 JA-time for conventional F2, and then reopened between 1820 and 1912 for TE. In South and Central America there was TE work between TG9JW and XE1GE on the north and LU7AT on the south (not to mention OA4C in the middle).

229 April 21 - North-south F2 propagation continued as LU9MA was worked or heard by K6EDX, K6EDX, K6PHE, W6SUE and K6RNQ between 1123 and 1155 PST. Japan to Australia TE that evening was reported by JA7BL. Japan also had a sporadic-E opening; JA7BL, JA7EV and JA8FY all reported contacts with JA5s and 6s between 1800 and 2020. VQ2PL hooked up with VQ4DO in

229

Mombasa via Es 1720-1930 GMT. 237

~~237~~ April 22 - More TE in both hemispheres was reported -- the JA-VK work continued, and XE1GE worked LU1ABF, LU7MAO and HC1FS. K2CBA came back to one of W4IKK's c.w. CQs to begin a new series of ionospheric scatter contacts. Bill's skeds with W4RMU and K2ITP continued unabated.

235 April 23 - Still more TE! XE1GE worked CE3TB, LU7MAO, LU8MAD and OA4C between 2010 and 2115 CST and JA7EV reports additional VK contacts during the early evening his time. ZL1ADP heard beacon CE8AE via F2 during the morning. A bit of aurora topped off the day as VE3AGU noted flutter on W2RHQ and Yellowknife.

244 April 24 - Sporadic-E! This time the Californians let the Texans and Arizonians in on it as W5WPJ, W5KSE and K7BPC were worked or heard by W6AJF, W6BJI, K6EDX and K6RNQ between 0857 and 0935 PST. That evening, LU3EX heard PY6FI at 2345 LU-time. Double-E or half-TE?

248 April 25 - JA8BY and JA8FY report an Es opening to JA3, 5 and 6 during the early evening hours. ZL1ADP picked up CE8AE again on F2 and VK9NT via sporadic-E.

245 April 26 - More Japanese Es -- this time between 1647 and 2024, with JA7BL, JA8BY and JA8FY reporting contacts with JA1, 2, 3, 4, 5 and 6. More TE, too, as LU3EX worked YV5BX and XE1GE, and KH6CCZ talked with VK4NG. ZL1ADP received OA3AAE as well as CE8AE that morning and noted other ZL stations coming in on BS.

247 April 27 - This date saw additional evening hour JA-VK contacts and a repeat of the KH6CCZ-VK4NG TE contact. Around the world, LU3EX and LU9MA got together on sporadic-E at 1846 LU-time. There was aurora, also; W1SUZ heard buzz on W1RJA and K2CBA around 1842 EST. W5LFM observed tremendously strong bursts and whistles of signal while listening to 120-mile distant KK2XFS. Cause unknown.

258 April 28 - A little scattered aurora was all we could find here for a change. VE3AET worked W3OMY and heard W8EMD and W8CDX 1810-1855 EST, while VE3AGU received K2MLT at 2112.

255 April 29 - Back to the TE and E. XE1GE heard Buenos Aires LUs, and LU3EX received TI2HLT via the former; ZL1ADP worked ZL3 and 4 by means of the latter.

265 April 30 - Big news was the sporadic-E which pushed eastward and gave W1s, 2s, 4s, 8s, 9s and 0s their first "short skip" contacts in some time. The opening seems to have begun about 1955 CST and lasted until roughly 2205. W5IVI in Louisiana was heard by W1LGE, K2GCU and K2PCG. The latter also picked up K4HJB, K4DYS and K4PIY in Alabama. Texas stations such as K5BDD, K5EBZ and W5EXZ had no trouble working into W8, 9 and 0. K0CLS in Aurora, Colorado heard five Alabama stations plus K5ALH in Mississippi. The day would not be complete without mention of XE1GE's TE work to LUs in Buenos Aires and Mendoza, and also ZL1ADP's Es report of VK9NT.

May Six Meter Activity

266 May 1 - W4IKK heard W1GQE and K2GYI on Sporadic-E around noon EST. VE7AQQ worked a couple of W6s at 1120 PST. LU3EX and LU7AT reported some TE work with XE1GE and TG9JW at 2250 their time.

— May 3 - W5KWP, New Mexico, heard K6MXZ via Sporadic-E at 2300 MST. No widespread openings were noticed.

280 May 4 - Signals from W0YZY, Nebraska, were received at W4ZBQ, Tennessee, at 1217 EST.

269 May 5 - W8CMS reported a short E opening to W1HOY and W1JBD at 1015 EST, while W0QDH in Kansas worked a number of W5s, 6s and 7s, between 1800-2300 CST.

263 May 6 - W0CNM and W0FKY in Colorado sent in reports of Sporadic-E contacts with Tennessee, Mississippi and the VE4 area. This took place around 1930 MST.

249 May 7 - Things really began to pop as far as Sporadic-E was concerned on this date. There was a good opening between Tennessee and Texas stations from 0900 CST until around noon. At noon PST there were good openings between California, Nebraska, Colorado, Oregon, Montana. Almost all of the western states were affected. Around 2100 CST in the evening, K5HTH and W5MJD in Texas received signals from W6-land and the latter reporter also received Tennessee signals. W7CJN in Montana reported an opening to California between 1830-2015 MST. May 7th was also a good evening for TE work between California and Argentina. W6PUZ, LU3EX, and LU7AT gave confirmation of this activity.

236 May 8 - Again, it was a good Sporadic-E day for western and mid-western stations. There was an opening around 0800 PST between California and Texas. K0LSL reported hearing signals from W9s and 0s at noon. Here are some of the locations that were affected by openings between 1700-2100 CST: Texas, Nevada, Washington, Arizona, California, Oregon, Colorado, Illinois. We couldn't see where this activity extended to include eastern locations at all, although W4IKK in Tennessee did hear stations in Colorado, Wyoming, and Montana around 1400 EST, preceding all this western Sporadic-E.

239 May 9 - W4RMU caught an opening to the Michigan-Wisconsin area at 1100 EST. Stations in California had a very active day. W6BJI worked VE7CN at 1320 PST and W7HWO at 2012. W6GCG also had QSO with W7HWO around this time. K6PBW got in some work with W7s and W0s between 1730-1930 and found an opening to W5s around 2100. Most of these openings seemed to be very selective as to locations of stations they affected.

209 May 10 - W5VCX reported a noontime opening to W8-land; this was confirmed by W8CMS. New Zealand stations were heard in California locations around 1500 PST. Later in the the evening around 2100, K6PBW heard several calls in the Texas area.

211 May 11 - There was another New Zealand-California opening via F2 at 1500 PST. W3BGI

heard KZ5? around 1100 EST. Sporadic-E activity was negligible.

209 May 12 - This was the day that gave eastern stations a chance to get into the act. Sporadic-E work was widespread and covered most parts of the U.S. and a great area of Canada. We would be hardpressed to find an area that did not participate during some time in the evening. There was also evidence of double-hop. K4KYS heard not only stations in Texas and Oklahoma but also received calls from W6s and W7s. Texas stations were working via E in all directions. W9JFP, W9JCI in Wisconsin heard XE1GE at 1720 CST. To top it all, LU3EX and LU7AT sent in reports of TE signals reaching them from Colorado and Texas. We almost forgot to mention that there was some auroral activity between northeastern stations, around 2000 EST.

203 May 13 - Bright and early, at 0700 PST, W6ABN heard some Sporadic-E sigs from W0-land. W7INX and W7ZOW reported the band was open from Oregon and Washington to Colorado and Montana at 0830. At 0830 EST, W4GJO down in Florida heard a couple of W5s on the air. At noon, Nebraska time, K0MSS reported an opening between his QTH and Washington-Idaho. In the evening there was more auroral work between stations in the northeast. The Sporadic-E held up quite well although eastern locations didn't fare as well as on the 12th. Activity was, however, quite widespread over all the west and midwest during most of the evening.

194 May 14 - VE1HT and K9DXT sent in reports showing some limited auroral work during late evening. W1RFU listed stations heard and worked in the Michigan area via E at 0040 EDST. This was probably the tail end of the 13th opening, but he did notice slight traces of aurora on some of these signals.

196 May 15 - K2LZL heard W3PMG on aurora at 1945 EST. That's all for this date!

144 Mc. During May

May 5 - K0EMQ heard aurora signals from W9ZIH and W0IFS at 1925 to 1950 CST. There wasn't any good opening, however.

May 8 - W1MMN and VE2FF both reported hearing A signals around 1700 EST. Only W1s and W2s were coming through.

May 9 - VE2AOM heard K2TKN, W2ZHI at 1810 EST. That's all the aurora for this date.

May 12 - Things began to pick up just a little bit. W1OAX, W8PT, W8WRN and VE2FF sent in A reports. The opening was in progress from about 1730 to 1800 EST. No W0s were heard, as far as we could tell.

May 13 - This was the best evening for aurora work during this period. Most stations reported that the opening occurred between 1730 and 1830 EST, although W1OAX and K0EMQ were both successful in A work until around 2200. Reports were received from W1s, 2s, 3s, 8s, 9s, and a couple of W0s. The most southerly station participating in this opening seemed to be W4LTU in Virginia.

May 15 - W8LOF and W8WRN each got in a small amount of A work shortly after midnight. W8LOF heard K2TKN, W1AZK, and W8KAY. W8WRN received auroral signals from W8s and W4HJQ.

IMPORTANT BULLETIN TO ALL SATELLITE LISTENERS!

As some of you may have heard, something very puzzling has been noted in connection with the 20 and 40 Mc. transmissions from U.S.S.R. satellites. This is the "ghost satellite" or antipodal reception effect. It seems that on many occassions reception has been possible not only when the Sputnik was within line of sight but when it was on the opposite side of the world!

To pick this up is quite simple. One listens for the signal at plus or minus about 53 minutes from the time it makes a close pass. The satellite will then be about half way around the world with respect to the observer. The signal seems to reappear for a period of three or four minutes and then vanishes until the satellite is once more within line of sight. The antipodal effect is heard best in the evening hours, and is observable on about 50 percent of the days, on the average.

It is very difficult to explain this reception without more information on its characteristics and properties. Ham reports can be absolutely invaluable here. The data required are (1) whether the signal was heard or not, and if so, roughly how strong it was; (2) at what times the operator listened and (3) the direction from which the signal was coming, if this can be determined or estimated. Note that, as in PRP reporting, negative reports are fully as important as positive ones. Note also that correct signal identification is vital; here the "L" signal now being transmitted is very useful.

Please try your hand at making these observations and send your results to PRP Headquarters at 530 Silas Deane Highway, Wethersfield, Connecticut, U.S.A. We'll see that they go to the people who can figure this thing out. Thank you.

P.S. Please keep all satellite reports separate from your regular v.h.f. propagation reports!

HONOR ROLL

It's our pleasure this month to add six more calls to the list of observers who have qualified for the PRP Consistent Reporting Award certificate. Congratulations to them and to the many stations, already on the list, who are receiving endorsement stickers. Well done!

W1GRT K0IAN K0LXK K0MSS JA7EV ZE1JN

NEWS AND NOTES

Sked Request

Joe Taylor, K2ITP, of Riverton, New Jersey, is seeking additional six-meter ionospheric scatter schedules. His frequency for scatter is 50.0015, either c.w. or SSB (upper sideband). Joe is now running 750 watts on c.w., 650 watts AM and 1 Kw. PEP on SSB to a 5-over-5 at 65 feet. The sideband rig is essentally W4UCH's design and works straight through on 50 Mc. using a quarter wave of coax for the required 90 degree phase shift. Joe reports: "I'm giving the SSB a try on scatter. It seems that it's copiable on almost any burst, but the background signal is a little too weak for voice (as expected). Not a bad system for meteor showers, though."

From The IGY Calendar

Regular World Days for the coming three months are as follows: June 9, 17, 18, 24; July 16, 17, 27; August 7, 12, 14, 15. Unusual meteoric activity is predicted for June 8, 9, 10; July 4, 27; August 7, 12, 14.

Reminders

Don't forget that if you are a PRP observer located in the United States who has never submitted any reports to us your name will be dropped from the News mailing list after this issue. We'd much rather have you reporting regularly than have to scratch you, so why not get started right now?

While we're in a reminding mood, how about some more pictures for the front pages of our upcoming issues? We're practically all out of them at the moment, so don't be modest! Let us put you in the showcase! Two tips, though -- antenna pictures have to be mighty, mighty good to come through the Multilith with the elements still visible. Station photos are a much better bet. But, a station photo with you in it is ever so much better than one showing only equipment.

73.

Sincerely,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

This bulletin is published and distributed by the American Radio Relay League, Inc., West Hartford, Connecticut as a part of the performance of Contract No. AF19(604)-2171 with the Geophysics Research Directorate, Air Force Cambridge Research Center, Air Research and Development Command.

THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 19 JULY, 1958

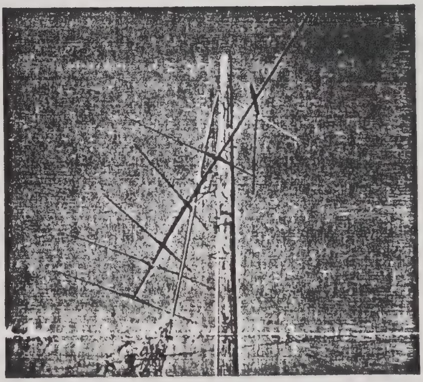
THIS MONTH:

ANOTHER CALENDAR-TYPE PROPAGATION SUMMARY,
MORE THOUGHTS ON TE FROM AROUND THE WORLD

MORE DAYTIME TE(?)

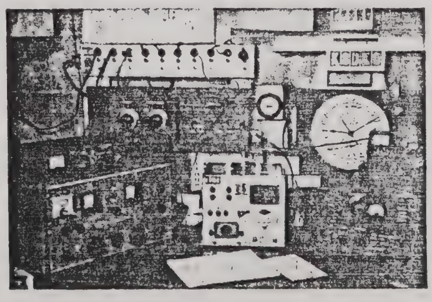
Although observer Fred Anderson, ZS1LA, of Worcester, South Africa has never managed to pick up a single 50-Mc. amateur DX signal, he has been reporting some mighty interesting things lately. ZS1LA is equipped to receive in the 38-50.5 Mc. range which included a lot of stations of various sorts. Reception of the British and French TV broadcasts, originating from Alexandria Palace and Caen, respectively, has been a regular thing for some months. Lately, something new has been added -- daytime TE-type fading like that observed by U.S.A. reporters on the South American beacons. Oddly enough, though, ZS1LA didn't begin to observe this until about the time when the S.A. carriers were no longer coming through. Here are his thoughts:

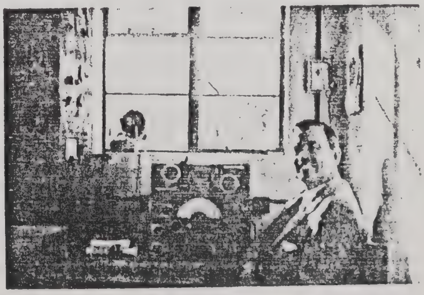
"You will note that I have often observed the typical TE flut-



ABOVE: The 7-element 50-Mc. long yagi of W7HWO, Benson, Arizona -- slightly the worse for wear. Although the villain here was an "Arizona wind", we dedicate this picture to all v.h.f. beams taken down or "modified" by the recent tornadoes. Doug, by the way, already has another 7-el. job built.

BELOW LEFT: The neat 50-Mc. station of Carl Willis, K8DKO, of Mansfield, Ohio. Gear in evidence includes an HQ-150, Tecraft converter, Communicator, Lettine 242 transmitter and v.f.o. and a home-built mobile rig. Not so visible is a 5-element Skysweeper beam 50 feet above Carl's 1435-foot elevation location.
BELOW RIGHT: African TE pioneer extraordinary Ray Cracknell, ZE2JV, of Hatfield, Southern Rhodesia. Ray's Philips CR101A receiver and two home-brew converters (30-60 and 49-75 Mc.) are on the table. The transmitter to the left runs 100 watts to p.p. 3C24s. In the window is an auto keyer. It consists of an old 78 r.p.m. phono motor driving two cams cut out of hardboard. The large cam keys "Test de ZE2JV" while the other controls the send-receive relays, giving a two second break per revolution (ten seconds) for break-in.





ter fading on European signals on 41-42 Mc. around noon till 1300 hours. These entries I always mark as TE? in the "PROP" column for the simple reason that I am not at all sure that TE scatter is always responsible for this type of propagation. One very often gets this sort of signal when the band is either just starting to open, when the flutter disappears, or during the last few minutes of a band opening (sometimes these last few minutes are drawn out to 1/2 hour or more). The real TE scatter signal as I know it does not do this sort of thing. It is there with its flutter, late in the evening, and it never develops into a good solid signal of the F-layer type. In fact, it generally only starts coming in after signals of the F type have disappeared for some time. Rather these midday signals make me think of long-distance h.f. reception when the F-layer conditions are not too favorable. They are very similar to this."

ZS1LA also reports further reception of CE8AE and OA3AAE around 1600 on May 16th. He notes too that ZS1SW and ZS1B, both of Cape Town, worked a Japanese station two-way about noon time on the 15th. This is a first to our knowledge.

NOTES FROM ZE2JV

Ray Cracknell, ZE2JV, wonders whether the Panama beacon on 49.76 Mc. (PRP News No. 17) is responsible for the carrier he's been hearing on or about that frequency since early February. Reception has been very consistent; during the first part of May, the signal was coming in all day long. Direction finding attempts have not been too successful, indicating mostly a broad maximum 30 degrees wide and to the north. Twice a sharp morning bearing just south of west was observed. The N.B.S. beacons in Chile and Peru have not been received at ZE2JV. It seems rather fantastic for the signal to be the one from Panama arriving from the north without flutter, but it is certainly worth trying to tie down for sure. Ray urges amateurs in the general area of Panama to be on the lookout for his auto transmissions from the north, especially next TE season.

ZE2JV has spent most of this past spring watching 70-Mc. TE. In this connection, a string of carriers on 70.1, 70.3, 70.4, 70.7, 70.8 and 70.9 Mc. has been positively identified as originating on the island of Cyprus. Since these 1800-cycle modulated signals run 24 hours per day, they may be of interest to other 70-Mc. experimenters. Nightly checks have been run with F9BG using 29.7, 50 and 72.025 Mc. Positive results were obtained on six meters all but five evenings during April through May, but nothing "for sure" has gotten through on 72.025. This is the more surprising because QRM from the above Cyprus carriers is usually S9, and other Cyprus signals as high as 74 Mc. have gotten through.

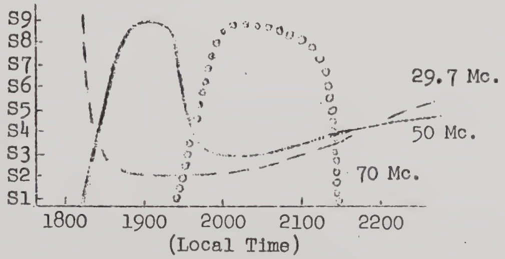
Below is a copy of a rough graph supplied by ZE2JV to illustrate typical results of his tests with F9BG. It is quite obvious that there is not much overlap between the usable times for the three frequencies. This has, of course, complicated their crossband work. Normally, 50 Mc. does not start to come in until ten meters is on the way out. Going to the high end of ten gained them an extra ten-fifteen minutes of crossband time. The strong 70-Mc. signals come in later still. There may be a connection here with 50-Mc. TE scatter seeming to be at its best a couple of years after the sunspot maximum and highest conventional MUFs. Let's hope that ham observations such as these will lead to the answer!

Typical Signal Levels

Toulon, France - Hatfield,
Southern Rhodesia

Spring, 1958

29.7 Mc.- 50 Mc.- 70 Mc.



MORE VIEWS FROM VK3

Last month we printed parts of a letter from VK3AEL. This month it's VK3ALZ's turn. What he sent in was not only a letter but a quite complete log of DX worked since early February. On it are five auroral contacts with VK2 and VK7 made between 1800 and 2315 Eastern Australian time on February 11th. This interval corresponds to 0300-0815 EST on the 11th. These were the last hours of the big February 10th A opening in the U.S.A.

Numerous TE openings to Japan are also recorded by VK3ALZ. Two of them were unusual in that no flutter was observed at any time. "RE the openings on April 1st and 18th, I am of the opinion that the lack of scattering is due to the complete absence of the E layer

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whilst in the earlier openings of February and March the E layer was always present to some extent as evidenced by the fact that a JA opening at night was usually preceded by an Es opening to VK4. In fact when the VK4 Es signals became very weak and fluttery (about 2100 as a rule) you could expect the fluttery JA signals in by about 2100. I am inclined to suggest therefore that a better name for transequatorial scatter would be sporadic-F -- as this type of propagation is not always a scattered type as we have shown."

PROPAGATION CALENDAR

50 Mc. -- May 16-31

At last! Just about all the sporadic-E any hardened PRP observer could desire! On several afternoons you could make half a WAS or more in just a few hours. Not only all states within 1500 miles could be worked, but double-hop propagation was common for the first time this year. Our evaluating problems were mostly telling single from double and telling when the various openings began and left off. Oh yes, there was some good aurora on the month's last day, too.

194 May 16 - Just (!) one sporadic-E session on this date -- about 1843-2300 EST, although taking a little longer to get started out west. Colorado, Wyoming and all points east were apparently in on this one if stations were active. One TE report -- LU7AT heard XE1GE at 2300 LU-time.

194 May 17 - This day's Es gave all the best cuts to the western states and left W1, 2 and 3 out entirely. Starting about 0845 PST W6s began working just about all stations within range, with double-hop adding spice around noon. This opening appeared to move to the east and all sections (with the above exceptions) were working in all directions by midafternoon. Evening brought two minor patches, it seemed, for both W4s and W6s had another hour or so of W5s. A half-hour aurora (1930-2000 EST) was noted only by two W1 and W2 stations. The VK-JA path was open into the early evening for F2. KH6CCZ heard CVJ 1456-1550 HST.

197 May 18 - A tiny late morning Es -- between 1138 and 1148 EST; W4IKK heard K5IQL and W4GJO heard Illinois. In the evening, 2120-2248 EST, there was a rather clean-cut opening between W1, 2 and 3 on the east, and W9 and 0 on the west. Also another TE report from LU7AT at 2300. Also more VK-JA work -- on F2 1400-1950 and TE 2030-2230 Australian.

197 May 19 - Another morning trace -- W1IGE heard Florida stations at 0900 EST. Between 1100 and 2245 PST, W6s worked everything within Es range to their east, with additional double hop around 1900 to Florida and Alabama. Between 1220 and 1500 CST quite a few scattered openings were in progress: Colorado to Texas, W8 and W3 to Texas, W9 to Ga. and Tenn., Neb. to Va. and Del. Between 1850 and 2130 EST the New England-W2 Area watched still another opening swing around from the south into the west. Additionally, there was more VK-JA work on F2 1730-2045 VK-time.

197 May 20 - Between about 0800 and 1000 EST the northeast was open to southern states plus the midwest on Es. From noon until about 2130 CST there was one great whopper of an opening taking in the whole central and southwestern U.S. plus at times the southeast and northwest. A little W4-W6 double hop showed up between 1845 and 1900 PST, and W6s worked Montana and Washington around 1730-2020. More JA-VK -- F2 1800-1855 VK-time.

198 May 21 - The 1800-0010 Es opening on this date showed a bit of east-to-west movement. Texans worked Tenn., Nev., and Cal.; W6 had a bit of double hop into La.; Mo. had a half-hour shot at Nev. and Cal. VK-JA F2 times were 1830-1955 Aust.

199 May 22 - This day's Es spectacular started in the west with W6s working northwestern stations about 1100 PST. Shortly they were working stations in all directions as were other areas across the country. This opening went on continuously until at least 2345 CST. Only call area missed was W1. East-west double hop was common, some of it quite short (just over 1500 miles). VK-JA had both F2 and TE -- 1805-1930 for the former and 2120-2215 for the latter.

206 May 23 - Between 1000 and 1600 PST W6s had Es openings to their north and northeast. Around noon there was some rather short skip amongst the 6s themselves. W7s worked each other plus Texas 1700-2200 PST. From 2000 to 2330 MST the band was open for Cal., Col., Tex. and La. Various central U.S. paths were also open. Between 1840 and 2000 EST New England and Nova Scotia observers reported W8, 9 and 0. Around 1340 and 2315 EST several W9s noted work with W6 with no midpoint DX in evidence -- more of that "long single hop".

211 May 24 - The Es pipeline from the northeast to Florida opened up between 0737 and 1250 EST. This happened again from 1430 till 1630, and this time southern stations to the west of Florida were also included. This westward movement kept up bringing in Texas stations who continued to work out until 2330 CST. Included was double hop from the southeast to Washington, Oregon and Idaho. On the west coast, W6s and 7s had a time for themselves 1030-1500 and 1730-2200 PST. During the latter period they noted double hop to Ill. and Tenn. W0s observed an all day opening 1000-2100 MST.

207 May 25 - This was probably the best Es day of the period which is saying a lot! The band was open all over the U.S. plus Cuba, Mexico and southern Canada virtually continuously from 0800 or 0900 local time till after most observers went to bed. Double hop was excellent, and specially good "D" periods were in the forenoon and early evening. There was Es in Europe,

207
too; I1ER heard CT1CO 1727-1740 GMT.

Of special interest is the fact that W5KRH and K5HVC both worked JA1US and heard JA1OW on 50 Mc. from 2330 to 0004 CST. Signals were 3x3 for W5KRH with rapid, TE-type fading plus slower E and F layer types. His beam was aimed to the west while Tokyo is NW! Almost forgot -- K2ITP heard W2 and 9 via aurora 2230-2249 EDST.

210 May 26 - From 0550 till 1300 PST the western states had it all to themselves as they enjoyed leftover Es from the night before. In the evening (1730-2200 EST) the eastern half of the country came alive with widespread openings which included double hop between Nova Scotia and Texas. The W6s also managed a few more contacts with Texas and Arizona. Japan had evening Es, also. JA1ARC worked JA2, 3, 4, 5, 6 and 9 between 1800 and 2000. A little later he worked VK9XK in New Guinea.

201 May 27 - A spotty Es day for a change. Around 0700 PST it was Washington to Colorado. At 0830 it was Texas to California. Between 1710 and 1915 PST we have more scattered Tex.-Cal. reports. In addition, W3AGT heard W6ETL (nothing else) 2310-2315 EDST (1810-1815 PST). Also -- between 1715 and 1836 EST W3PMG worked Conn., Mass., N.Y., Va. and Vt. on aurora.

202 May 28 - Another little aurora with VE3AIB hearing W2YYI and W8HGE at 2222 EST. In the sporadic-E department there was just one opening from 1700 till 2120 EST. The path was Florida to New England, N.J., Pa., Ohio, Ind. and Mich.

219 May 29 - Here the Es opening seemed to get its start in the southeast and southcentral U.S. with Tenn. working Tex. and Okla. and Kans. working Miss. as early as 1050 EST. Things shifted west and Texans had a fine time of it until as late as 2115 CST working everything within range to the west and north. Activity began in California at 1500 PST and continued through 2000. This included double hop to Alabama. Between 2100 and 2142 EST W4IKK worked Arizona while hearing no short skip. More long E?

213 May 30 - This date provided nearly simultaneous eastern and western Es openings. Between 0930 and 1230 EST northcentral and northeastern states worked the southern states as far west as Texas. There were relatively few east-west contacts. While this was going on California, Washington, Oregon, Montana and Colorado were working each other (0600-0930 PST). Only interconnection between these openings was an Oregon report of double hop to Tenn. and W. Va. Later on VE7AQQ worked Utah and Col. between 1445 and 1625 PST.

209 May 31 - Aurora was the big thing here. Between 1400 and 2130 EST, W1, 2, 3 and 4 were working themselves and W8 and 9: the latter sections worked all the above plus W0. Oregon stations report auroral contacts with Washington and VE7 around 1700 PST. This promptly turned into sporadic-E, however, and, until 2200 PST, the northwest plus Cal., Ariz., Col., Utah, Tex., and Okla. had themselves a single-hop time of it. Between 1900 and 2300 MST W0s worked the west coast, but nothing at all to the east. Only eastern Es report came from K2ITP-ITQ who picked up Yellowknife, flutterless and with direct heading, between 2130 and 2300 EST, apparently double-hop Es. Late afternoon F2 work between Australia and Japan continued.

On 144 Mc.

The first nine days of the period saw nothing doing at all on two meters, save a few tropospheric openings. Then followed several spotty auroral sessions, leading up to a grand "A" finale on the final night of May.

May 25 - This aurora was nothing to really write home about, but W2ORI did pull in call areas 1, 2, 3, 4, 8 and 9 between 1600 and 2255 EST. Most southerly state was Kentucky, and on the west it was Wisconsin. Other PRPers in on this one were W1MMN, W1REZ, W3GKP (whose nightly 2100 EST skeds with W4RMU are continuing), W8EHW, W8FEU, W8PT and W9KLR.

May 26 - This one was smaller yet. W1REZ heard W1AZK and K2GQI and worked VE2LI 1700-1735 EST, while W8FAZ heard several W8s and worked KN8HZL and VE3CJV between 2105 and 0030 the next morning.

May 27 - W1MMN, W1REZ, K2GQI, K2RDI and VE2FF were in on an eastern "A" session between 1800 and 1830 EST. At 2050, W8PT worked W4HJQ in Kentucky and heard a number of W9s.

May 28 - This night's little aurora seemed to leave New England in the lurch for once. W8EHW heard W8s around 2230 EST. W9AAG heard W9ZIH and W4HJQ 1900-1940 CST. K0EMQ, Cedar Rapids, Iowa, heard Minn., Mich., Ill., Ky. and Ohio between 1950 and 2134 Central. Furthest east report came from VE2FF who picked up W2SAI and W2AZL at 2225 EST.

May 31 - Old man aurora took two nights off and cooked up a good one for the month's last evening. Only trouble was, the night also featured severe rain and thunderstorms across the midwest (connection, wonders W9AAG?). The resulting precipitation static and lightning crashes made hard going for many. Between 1905 and 2032 EST, W8BAX heard Va., W. Va., Ky., Md., N.J., N.Y., N.H., Conn., Ill. and Iowa. W2ORI reported the band open as far south as North Carolina and as far west as Iowa at his location. W2BLV had a long list of stations and said: "this one lasted from 1500 until 2140 EDST. Heard no W0s." In Vermont, W1MMN called this one a very good aurora, but said the real DX didn't last too long (1900 EST). Down south, W4FWH in Doraville, Ga., heard Ohio W8s and W4MKJ in Louisville, Ky., the latter being "very loud", between 1900 and 1926 EST.

An interesting comparison was provided by a report from Olof Karlsson, our VSWL observer in Malsryd, Sweden. He logged many Swedish and Danish stations (including Copenhagen beacon OZ7IGY) via aurora. His opening lasted from 2304 GMT until 0130 on June 1st. This is the same as 1804-2030 EST -- virtually the same interval when the band was open in the U.S.

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220 Mc., Too

May 31 - W3ARW reports getting a card from W8GHX, Tipp City, Ohio noting reception of his 220-Mc. signals via aurora at 1910 EST, this date. Due to low power at the Ohio end, no two-way could be made.

50 Mc., June 1-15

Almost every day during the June 1-15 period was a good day for sporadic-E somewhere! In fact, there were some long-lasting, widespread openings that made it quite difficult to figure out just when activity began and ended. Exceptions to this favorable season came on the 2nd and 12th of June. PRP observers drew a complete blank on those days. Good auroral openings were in evidence for north and northeastern locations on several evenings, too.

219 June 1 - Early in the morning, about 0830 PST, there was sporadic-E work between California and Washington. About an hour later, the band opened up between W6 stations and hams in Colorado and Montana. W9s had good luck with W2s and 3s around 1000 CST while W8s were working into Florida. Around noon EST, stations in Connecticut and Massachusetts were receiving E signals from the Florida area and also from the Missouri-Illinois district. W3VAM heard various signals in Iowa and Nebraska at this time. Activity dipped during the evening somewhat, although an Arizona to Oklahoma path was open around 2000 MST. W3TFA and W8FEU both noted E work on their reports for this evening. Let us not forget to mention that VK4NG continued his excellent F2 contacts with JA1s and 2s at noon his time.

227 June 3 - Here was another good day for E although openings seemed shorter and covered less areas. W5FXN sent in a report of the signals he heard from Tenn., Ill., and Mo. at 0800 CST. North central states were favored with paths around noon their time; observers in Arizona, Oregon, Washington and California exchanged reports during evening hours. Between 1900 and 2200 MST, Colorado hams were able to work into both California and Wisconsin. Both F2 and TE were available to VK4NG and Japanese stations.

246 June 4 - Early morning hours provided openings between northeast and southeast locations. At this time, W5EXZ was receiving signals from W3s, 4s, 8s, and 9s. The next big opening that we noticed came during the evening (practically all evening) when the band was open between northeast and central stations to the whole W4 and W5 area.

256 June 5 - Double-hop E appeared 0730 to 1230 PST to give some W6s a chance at Virginia contacts. W4ZZ noted EE during the evening around 1930 when the band was again open to California. Noon and early afternoon was a good period for W1s, 2s, 3s, 8s, 9s, and 0s to work into the southern part of the nation. Some EE was also noticed during this time. Here again, activity seemed to dip in the evening although there were still evidences of openings in progress. W1KHL and W1SUZ both worked into Miss., Ark., and La. around 1900 EST. and K2ITQ discovered some auroral buzz on W1 and W2 signals at this time.

260 June 6 - Auroral work held the spotlight although there was still plenty of E around. K6PBW noticed an E path into Texas around 1700-1800 PDST. W7 signals in Phoenix, Ariz. kept K4KYL busy at 2000 EST. A W4 to W0 and W9 to W5 path was also in progress. The aurora started at approximately 1800 EST and continued well into the next day's wee hours. It was confined for the most part to stations in northern locations. Oregon stations were in on this one, too. W5FXN and K5ABW surprised us with their report of TE signals from OA3AAE at 2210-2310 CST. The beacon signal had flutter on it, too!

238 June 7 - California to Colorado work occurred 1030-1100 PDST. W8FEU and W8OJN submitted reports of Florida signals heard during early afternoon. W1SUZ had a grand time during the evening: W3s started to come in on aurora at 2055 EST. These A sigs were followed by W9s and W0s on E and finally VE7CN was heard on EE. W0HNV (North Dakota) came through loud and clear to many W1s (W1FVV, W1HDQ) around 2330 EDST while VE4HS and VE4DI were also widely heard in this area. Auroral flutter was noticed on W1s and 2s 2130-2300 EDST by W3PMG.

233 June 8 - This was one of the best days for E work during the period. We can break it down no further than to say that the band seemed to be open almost all morning and afternoon in almost all sections. CO2ZX began his E season with reception of signals from Texas and Ohio. In the evening, W1KHL again noticed some aurora on W1s, 2s, 3s, and VE3s, between 1910-2030 EDST.

252 June 9 - Activity was mostly of the A type. The evening auroral opening gave many stations a chance to participate and Washington to Oregon A reports were received. K2ITQ caught an E opening around 1620 EDST to W5s and 0s while W8OJN reported reception of W9s and 4s at 1300.

234 June 10 - Here's another good sporadic-E day with activity at its peak during afternoon and early evening. Paths, east to central and north to south, were quite widely reported. W1SUZ also caught a little aurora around 1730 EST.

235 June 11 - ZL1ADP worked VK9XK and W6s on F2 at noon his time. Sporadic-E held up well and paths were numerous and varied during most of the day and evening.

227 June 12 - ZL1ADP continued his F2 work with W6 stations.

220 June 13 - Activity was still not back to par after the June 12th lapse. However, W7BDU did get in some work with VE7s and stations in Idaho and Montana at 2000-2200 PST.

208 June 14 - Aurora, single and double-hop E were well represented. W1OAK and W2IDZ had good luck with reception of W1s, 2s, 3s, and 8s on A during the evening. Double hop E was

noted by W7INX about 0800 PST when he heard east coast stations and W8CMS encountered the same 2300-2400 EST when he heard signals on the west coast. Single-hop activity seemed to take place mostly during late afternoon and evening and we'd be hard pressed to find an area that wasn't affected by some opening.

197 June 15 - W1s, 2s, 8s, and 9s had a good, strong E opening to southern states during most of the morning. Signals from the northeast were also received by CO2ZX at this time. Activity slackened during the afternoon but came on again in full force about 1700 EST. The north-south paths were open and northern stations noticed more signals from Arkansas and Texas. The opening spread farther west in the evening. 2100 to 2400 CST was a good time for W0 work into New Mexico, Idaho and Mont. Signals from the Texas and Ariz. areas found a path into W6-land as they had done on June 14th during brief times in the morning and evening.

144 Mc.

June 1 - An opening occurred between 1700 and 1900 EST. Northeastern stations, W8s and 9s were active. It extended to include K0EMQ and W0SMJ in Iowa and W4MKJ in Kentucky. W8s seemed to have it best in this one.

June 6 - Auroral work started around 1900 EST and lasted much longer than on the 1st. W1OAX was still hearing signals at 0320 EDST on the morning of the 7th. K4EUS and W4VVE in Va. got in on this one, as well as W4ZBQ in Tenn. New England stations and W8s and 9s were active but didn't find many W0s participating. W3TUZ, W3ARW, K1AOX were still receiving A signals during the last stages of the opening early on the 7th of June.

June 8 - W1KHL, W1MEP, and W3GKP heard traces of aurora around 1930 EDST. W1s, 2s, 3s, and a couple of VEs were heard. No full-fledged opening resulted.

June 9 - This was another fairly good opening that lasted from 1730 to 2200 EST. It covered about the same area as the June 1st opening. VE2LI, VE2FF, VE3BHZ, VE3AIB were widely heard.

June 10 - Around 1700 EST, VE2FF and W2LWI heard very slight traces of an A opening. A couple of W1s and W2s were received. Nothing materialized.

June 11 - W2ORI and W2QNA, New York, reported that good tropo work into Ohio was possible during the evening. In Ramstein, Germany, W3YHI/DL4WW heard PE1PL (near the Hague) at 1229-1236 GMT on meteor scatter, 1236-1239 on aurora, 1239-1256 on scatter, again. Signal strength of PE1PL was S2, S4, S3, respectively.

June 14 - W2ORI, VE2FF, and W9AAG sent in reports of a few A signals that they heard during the evening. There wasn't any widespread activity.

June 15 - Aurora work during the first few hours of the day rounded off this period. W1MMN reported "good strong Au" from 0133 to 0145 EDST. W1s, 2s, 3s, 8s, and 9s, were active and a few stations in Virginia were heard.

NEWS AND NOTES

Certificate Winners

Here are the stations who have qualified this month for our Consistent Reporting Award Certificate. Congratulations to: W1KHL W8FAZ W9MHL JA8FY

From The IGY Calendar

Regular World Days for the next three months are as follows: July 16, 17, 27; August 7, 12, 14, 15; September 6, 13, 14, 20. Unusual meteoric activity is predicted for July 4, 27; August 7, 12, 14.

This is the first issue of the News that will not be received by several hundred inactive "observers". We feel that this move has already been worthwhile in that it has brought in reports from a number of fellows not previously heard from. It also brought in some sad stories (which we expected) and some compliments (which made us feel good). As one fellow said: "You can put sugar in my beer, sand in my shoes or dried bread crumbs in my bed, but whatever you do please don't take me off the mailing list of the PRP News" Along with this came a report, so we didn't. One more thing -- just because we dropped the inactives and just because there are only six months of the IGY remaining, don't get the idea that we can't use more reporters. We'll never get to that point! So if you know someone who would make a good addition to our project, have him drop us a line or else mention him on your next report. Much obliged.

With 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT

NUMBER 20 AUGUST, 1958

FEATURING:

SMOKEPUFF RESULTS

ALL THE LATEST PROPAGATION DOINGS

THINGS VHF AT THE NATIONAL CONVENTION

SMOKEPUFF RESULTS

Observers interested in "Operation Smokepuff" (QST, May, 1957) who have not been able to take part because of living too far from Alamagordo, New Mexico will be glad to hear that the latest group of firings has been declared a scientific success. The object of these tests, you'll recall, was to create a patch of ionization with chemicals released from a research rocket. A network of hams was organized to help prove the existence of this ionization by bouncing their h.f. and v.h.f. signals from one side of the patch to the other.

On May 20, 21 and 22, Nike-Cajuns soared aloft with their ionizing cargoes. A "hardware" difficulty caused the middle missile to release its gas 30 km. higher than the intended 120 km. altitude but, other than this, things went well. On all three occasions, the released chemicals produced visible clouds larger in apparent diameter than the moon, making excellent photography possible. The first test produced a 15-minute echo on a 3-Mc. ionospheric recorder and one lasting about 2 minutes on a

K2ITP K2ITQ

Here are two well-known v.h.f. ops -- Joe and Hal Taylor, K2ITP and K2ITQ, of Riverton, New Jersey. Hal is seated before the receiving gear (6AK5-404A converter into S-40B), while Joe stands alongside the closet wherein resides a 4-250A rig run at 700 watts c.w., 650 watts AM phone and 1 kw. SSB. The antenna is a 5-over-5 spaced 5/8 wavelength and 65 feet above ground. That array of certificates (including two PRP Consistent Reporting Awards) and 50-Mc. DX cards speaks for itself!

Another young 50-Mc. DXer -- this is Clay Wallin, K5EBZ, of Austin, Texas. Although just 15 years old, Clay has been on six meters since April, 1957. His states and countries worked totals are 38 and 9, respectively. The transmitter at K5EBZ (upper shelf) uses a 6AG7-6AG7-4X150A lineup. We're glad to see another PRP Reporting Award adorning Clay's wall.

23-Mc. radar. Ham results on 14, 21 and 29 Mc. were nil, but smokepuff beacon signals were positively identified on both six and two meters, lasting over one minute at one six-meter station.

On May 21st, the higher altitude caused ionization to die away quickly. Barely readible signals were heard on six and two meters, and 2-3-minute and 20-second echos were noted on the 3- and 23-Mc. sets, respectively. The next day no ionization was detected by anyone. This was as it should be, however, for the third test was a calibrating shot to verify that previous ionization was really due to chemicals. The next Smokepuff series due in September or October will explore a new approach and perhaps yield longer enduring echos.

ARRL NATIONAL CONVENTION -- A BIG ONE FOR V.H.F.

Any v.h.f. enthusiast who can possibly attend the 10th American Radio Relay League National Convention in Washington, D.C. this August 15, 16 and 17, and doesn't, is a mighty foolish fellow. For one thing, this may be your last chance to get to a really big ham convention for some time -- there may be no 11th convention for the next few years. For another, a committee of well-known v.h.f. men, W3GKP, W3KMV, W3OJU (Chairman), W4AO, W4DWY, W4LTU and W4UMF have gotten together a really wonderful program. Listen to this:

All the organized v.h.f. activities take place Saturday, August 16th. From 9 to 12 AM there will be a session of invited talks moderated by Sam Harris, W1FZJ. There'll be W2UTH with the story of "The World Above 50 Mc." in color slides, W1RUD (of W1MHL/1) on contest operating, EI2W on six-meter observations, W4AO and W4LTU on low-noise receiving techniques and, hopefully, W3YHI/DL4WW from Germany and KH6UK from Hawaii. In the afternoon you can spend your time at a special VHF Headquarters area. In the evening, Ed Tilton, W1HDQ, will conduct a v.h.f. forum to discuss and answer your questions. All this plus the many non-v.h.f. activities described in the last few issues of QST. Don't miss it!

ITEMS FROM DL4WW

Since our note about him in the April News, Jack, W3YHI/DL4WW, has continued to send us loads of information about European two-meter doings. He is now well established in a new apartment on the top floor of the highest building around, and has his 500-watt c.w./s.s.b. rig and big bertha beam going in fine style on 144.021 Mc. Thought you might like to hear what he had to say about his first experience with aurora since reaching Ramstein.

"On July 8th I began to wonder about my converter as soon as I turned the gear on at 2215 CET. Things sounded uncommonly different and a few fast checks yielded evidence of the old buzz. I spotted this via the 100-kw. TV signal from Dresden since that signal was coming in S3 on the direct path and also S3 with aurora peaking to the NW. Incidentally, the April PRP News gave the frequency of that signal as 145.250. That's close but not exact. I have measured it as 145.262 plus or minus .001%. That signal is used as a European version of the La Guardia and former Washington beacon signals. I can usually hear it on the direct path with an average signal strength of S1 with QSB (Dresden is about 275 miles ENE of my QTH).

"I put out a long QST on c.w. in all directions as soon as the buzz was noted and at 2256 heard OZ3NH coming through. GM3LAV came through at 2303 and he was followed by a couple of weak ones that I couldn't identify on c.w. There were a number of weak phone carriers also. Nailed OZ3NH for my first Danish QSO on 2 meters at 2315. Called GM3LAV until my arm gave out, but he wasn't buying. The aurora dropped out at 2340 here.

"Later normal path QSOs with other stations brought in this additional data regarding the evening of July 8th. G stations near London were heard and worked on the direct path by DL3NQ (10 miles north of Heidelberg) up to the time that the aurora came in; they then faded out on the direct path. DL3YBA near Hannover had a ball working SM7BTT, OZ9AC and ON4DW between 2300 and 2330 while the aurora was coming in northern Germany. He also heard GM3AVK, SM7BIP, OZ2AX, DL3VJ, DL6WUA, SM7BZ and DL3NH. He advised that the aurora returned at 0120 CET on the 9th and stayed in until 0215. I was sacked out by then.

"Seems as though the opening covered the area from Scotland through Denmark, Sweden, Belgium and western Germany. I would classify it as a "mild" aurora opening at my QTH. I did not hear any of the aurora beacons during this period. Derned if I know why."

The beacons Jack means are the following IGY aurora stations. They operate 24 hours daily with antennas bearing north for aurora tests.

DL0IGY	145.79 Mc.	50 km. SW of Hannover. Keys twice each five minutes in slow speed c.w.
DL0SG	145.725 Mc.	Located at Straubing about 110 km. NE of Munich.
DL0SA	145.45 Mc.	Located at Munich.

Jack suggests that we mention the European VHF Contest which will be held September 6th and 7th. This is the big one of the year, and activity should run very high. It begins at 1800 CET (1700 GMT) on the 6th, and lasts 24 hours. Also -- there will be a gathering of the

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v.h.f. clan at Weinheim, near Heidelberg, on September 20/21 at the Golden Sheep Hotel. Make your reservations early for the beer is good! Just in case you can't make it, Jack promises to let us in on what transpires in a future letter.

PROPAGATION CALENDAR

50 Mc. -- June 16-30

June 16-30 was another good period for sporadic-E and aurora. Openings occurred every day and the 19th, 20th, and 28th were particularly outstanding. Sporadic-E activity was reported in evidence on every day by our observers in Japan; here's how others fared:

191 June 16 - 0030 to 0200 EST, Tennessee stations heard Florida, Texas and double-hop signals from Oregon. A path was open between Texas and Louisiana about two hours later. W2 stations worked into Florida around 1250-1300 EST and hams in Colorado locations had good luck with W4s, 1830-40 MST. This latter was a very small and short opening, however. At 1915 CST, XE1GE heard K9EMA's sig.

182 June 17 - Florida was open to the Ohio area around 1315-1330 EST and W6s got a rather small opening to W5-land at 1330 PDST. Activity really began in earnest around 1800 EST. All areas east of and including Colorado were in on this one and (it looks like) were able to work sporadic-E distances in all directions. This opening lasted at least until midnight.

177 June 18 - Well, maybe we'll change our minds and say that the opening lasted all night. There certainly was plenty of E work going on the next morning, anyway. 0830 EST is the earliest time reported. Paths seemed to be north-south with stations in northern and central locations working down into the deep south, Florida, Texas. W6s did get in a lot of E work with W5s and W7s and EE with W4s, 0830-1215 PST. There wasn't too much going on during the late afternoon and early evening, but from 2030 to 2300 PST paths were open between California and Oregon, Washington, Arizona, Colorado.

189 June 19 - Things started out slowly during the day and then built up to good activity during the evening. W1s contacted Virginia and surrounding locations between 0900 and 1100 EST. W6s and W5s had E QSOs, 1100-1200 CST. 1300 EST saw a north-south path between New England and Florida. Concentrated work started around 1730 EST and again affected all eastern and central stations. We didn't hear much about this from the W6s and W7s. The rest of the nation again worked sporadic-E in all directions and Canadian and Nova Scotian signals were widely heard.

133 June 20 - As far as we could tell, the band was open practically all day long. K5ABW and W5FXN (they must have been taking turns) sent in a report covering 0730 to 2200 CST. They had plenty of double-hop in the early morning to write about. Most of the morning, activity, however, affected northeastern and central and southern stations but the rest of the country got in during the afternoon and evening. Short skip between W1s and W2s was notable around 1830 EST. W6s got in some long haul double-hop to Florida between 1745-1945 PST. This was a very good date for double-hop, by the way.

194 June 21 - Here's when the aurora came to light. Report was received of a small A opening between W2s and W9s at 0700 EST. W1s, 2s, and 3s also reported some A work between 1240-1340 EST. The main opening occurred 1600-2200, however, and covered a good deal of western territory. Nebraska got in on this one. Sporadic-E was confined to the western states. Between 1840 and 2100 MST, paths were open between California, Washington, Oregon, Nevada, Idaho, and Montana.

213 June 22 - Another small aurora was noticed by New England stations around 1800 EST. XE1GE put in a strong signal to Texas and worked quite a few W5s on E, 1925-2025 CST.

217 June 23 - VK4NG heard JA signals, 0815-0900 GMT. E openings were few in this country. Wisconsin area had a small one to Texas around 1100 EST. Florida stations had good luck with 8s, 9s, 0s at 1900-2100 EST. An Arizona to Texas path was open around 2000 MST.

221 June 24 - What activity there was took place mostly during late afternoon and early evening. There was a north-south opening on the west coast around 1300 PST. At 1600 EST, W2s were able to work into Alabama on a small scale. Florida signals were heard in Illinois, Missouri, Tennessee, Oklahoma, and Texas between 1900 and 2130 EST.

226 June 25 - Only a couple of openings to report here also. An Illinois to New England path was in evidence 1100-1130 CST. W1s were heard by W4s around 2215 EST and W8s, 9s, and 0s were able to reach down into Texas, 2230-2330 EST.

233 June 26 - 1840 to 2130 EST, southeastern stations were working northeastern and central locations. Nebraska was open to Arizona about this same time. Around 2015 to 2040 MST, Colorado stations worked and heard hams in Texas and Louisiana.

237 June 27 - Just a brief spurt of E activity in the morning, and that was all. E paths started to open up around 0830 EST and had closed around 1030. Stations affected were located in the northeast and central states. Not much was heard from Florida, Texas, and western states. Oklahoma did get into the act around 0845 EST when Ohio stations heard signals from Oklahoma-way. W2s noticed a very small auroral opening around 1850 EST.

232 June 28 - Another good day for two types of propagation at least - E and A. Sporadic-E began around 0830 EST and stations in most locations were able to get in some QSOs on and off during most of the day. Paths were open in practically all sections of the country and there was plenty of double-hop between W6s and eastern stations. The aurora began, for the most

232

part, around 1500 EST. This opening affected the usual stations in the northeast and extended west to include Oregon. Oregon hams were able to work Washington, Idaho, and British Columbia on A between 1600 and 2230 PST. Around 2300, they started to report E contacts to VE4s and North Dakota. It was also noticable that W1s encountered some evidence of sporadic-E creeping in toward the end of the day.

220 June 29 - The aurora work continued during the early morning hours of this day, too. Reports show that it was still in there at 0300 EST. Evidences were also noticed at 0745 EST. W6s got in some sporadic-E contacts between 1500-1600 PST when they were able to QSO the Texas area.

217 June 30 - Between 0900 and 1200 EST, New England stations and W2s and 3s contacted stations to the west of them that were within sporadic-E distances. That's about all for the morning. W6s worked into Arizona, 1515-1600 PST. Eastern and central locations again experienced various E paths between 1800 and 2200 EST. W1s, 2s, and 3s were able to work to Illinois, Missouri and Wisconsin; Florida was heard in the north; and W4s and W5s were also getting through. W7s didn't have much to report for this date.

144 Mc.

There was good news for aurora men during this period. We don't mean to say that there were a lot of openings, but rather that there was a really terrific one - on the 28th-29th. The rest of the period was pretty lean but this 28th spree made up for any thumb twiddling that went on while waiting for it.

June 18 - W1REZ heard A signals from K2GQI, 2100-2105 EST.

June 20 - W9AAG and W1MMN both heard a couple of signals with buzz during late evening. Again, no widespread activity took place. In fact, these were the only A reports received for this date.

June 21 - Here's where the activity picked up. The report covering the longest period of time came in from W9KLR, who worked and heard aurora off and on from 1258 to 1930 EST. Most of the other reports, however, covered from 1700 to 2000 EST and this seemed to be the time when concentrated A work took place. W3GKP, Md., W4LTU, Va., K0EMQ, Iowa, VE2FF, Que. had good luck with this one and many reports were received from W1s, 2s, 3s, 8s, and 9s.

June 22 - W8FEU, W9AAG, W1OAX, and W2ORI heard A signals during early morning hours. This rather small and localized opening occurred between 0100 and 0300 EST. W1REZ also worked some W1s, 8s, and 9s on aurora, 1430-1820.

June 28, 29 - We'll have to treat these two days as one unit since the opening on the 28th extended into the 29th. This was the best opening that has occurred in a long time. W2ORI and W9AAG reported that it started as early as 1520 EST and, according to W3GKP, lasted until at least 0315. He stopped operating at that time but said that the band was still open. W8LOF was busy with A QSOs until 0500, and W4LTU wrote that the A was still in at 0642-0749 on the 29th. Activity covered a great deal of territory - west to Colorado, south to Oklahoma and Mississippi and east as far as there were stations. W5PZ, Okla., was worked by W8s and 9s (but not heard by 1s, 2s, 3s) and reception of W5RCI, Miss., was also recorded. All this A work was followed by a strong tropo opening in some locations and W8PT heard a total of 25 states on the 28th and 29th. Olof Karlsson in Malsryd, Sweden had a long list of auroral heard reports to submit. Between 2148 GMT on the 28th and 0143 on the 29th, he logged the Dresden TV station plus SMs, Gs and GMs. A reopening (1320-1836 on the 29th) featured DLs and SMs.

50 Mc. -- July 1-15

Not a day passed this period without at least a little sporadic-E somewhere. Besides a really widespread opening on the 6th which featured both double hop and very short skip, there were a multitude of small and medium sized affairs. We won't pretend to think we've caught all of them, but here's what we did pick up in our search through the logs. Oh yes -- there was aurora on the 8th which seemed to wipe out sporadic-E from the areas affected for from two to several days.

215 July 1 - This date featured an evening sporadic-E opening for those located in the central and eastern United States. Stations from Nova Scotia to New Mexico and from Alabama to South Dakota worked most everything within Es range and within that area between 1830 and 2357 EST. The latest report noted was an Alabama-Michigan contact at 0108 the next morning. There was sporadic-E in Japan, too; JA7EV and JA8BU reported openings 0838-1236 and 1750-1855 JST.

215 July 2 - Es between JA7 and 8, and JA4, 5 and 6 continued. Times were 2030 to 2154 JST. At 1022 EST, W1LGE heard W5OSV in Dallas. Between 1155 and 1340, the band was open between Ohio, and Texas and Alabama. From 1002 until 1455 various Tennessee stations worked into Texas and Colorado on one hop and California via two. West coasters enjoyed the double hop even longer; W6BJI reports work to Louisiana (with Texas and New Mexico as midpoint stations) as late as 1700 PST. When it came time for the evening session, east and west split up. W1, 2, 3, 4, 5, 8, 9 and 0 plus VE1, 2 and 3 enjoyed a slightly less effective version of the preceding night's fun between 2000 and 0142 EST (things dropped out for the northeast a bit

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215 earlier -- about 2300), while Es work up and down the west coast transpired between 2032 and 2112 PST.

224 July 3 - All morning long (between 0740 and 1200 EST) W8 and 9 were working everything within Es range from the SE around into the west. Tenn. W4s were also working out to the west. This opening dissipated into bits and pieces providing an Ohio-Florida path 1310-1330 EST and Ill. to S. Dakota and Mont. contacts around 1235 CST. Evening brought work between the northeast and Ohio, and Texas, Okla. and Louisiana 1905-2012 EST. W6s and VE7s got together from 2005 to 2043 PST. K4KYL in Tenn. reported Es work to the west between 1945 and 0008 Eastern.

232 July 4 - First sign of anything on this date was W2JTE's report of Florida stations at 0815 EST. From then on until perhaps 1315, all but west coast U.S. stations enjoyed good, if somewhat spotty, single hop Es. Last report noted was that of W0BTG's Utah work at 1420-1440 CST. At about 1841 EST Es opened up from New England south, and from then on W1s, 2s, 3s, 8s, 9s and 0s were busy working to the south and southwest, while Colorado, Texas and Kansas stations were going places to their northeast. There was even some double hop; W4IKK worked W7INX at 2117 EST. Latest time we saw was on a Michigan report -- 2232 EST. Sporadic-E wasn't confined to the U.S., either. SWL-F4 in Malsryd, Sweden heard HB9BZ in Ulster at 1852 GMT.

238 July 5 - Here the west coast got another chance. Between 0747 and 1126 PST Es was open from California to Ore., Wash, and VE7. Between 0500 and 0945 the W6s were also working east including some double hop to Florida and even Mexico City. Over east, a Missouri to New York and Maryland path opened up at 0720 CST. Off and on between 0855 and 1136 EST the W1s and 2s worked to the south. CO2ZX celebrated newly received permission from the Cuban government to resume transmitting by working W4HQL at 1205 EST. During the early afternoon southern stations began to work more to the west plus to their south -- TG9JW was heard by W4FNR and W5EXZ, and the latter also pulled in XE1PY.

232 July 6 - This was the biggest sporadic-E day of all. For the east coast, there were three main openings -- morning, afternoon and evening -- covering the following approximate times: 1045-1233, 1430-1645 and 1830-2050 EST. In the morning the south and midwest came through; in the afternoon it was W8, 9 and 0 with some very short skip coming in to western N.Y., and for evening it was the midwest again swinging SW and including double hop to New Mexico. Southern stations reported the same three basic openings. They worked to the northeast in the morning and afternoon and the northwest in the evening with double hop to Cal. and Wash. in the latter session. West coasters reported Wash.-Ore. to Cal. and Cal. to Tex.-N.M. contacts 0742-1113 PST. From 1629 till 2109 there was more of the same plus Idaho, Mont., N. Dakota and VE4, and also "EE" to Iowa, Mich., Ill., Ohio and Pa. W5, 8, 9 and 0 logs confirmed the above and added N-S work between these areas in the evening. Japan also had Es, well timed for the JARL VHF Contest, and JA8FY reported working JA1, 2, 3, 4, 5 and 6 between 1038 and 1624 JST. Not to change the subject, but W4IKK heard aurora on WWI and W0DNW between 2235 and 2240 EST.

237 July 7 - Still more Es! On this date, the writer was sitting in with W4IKK, and between 0928 and 1500 EST we heard the whole northeast, then western N.Y. and Ohio, then Colorado and Texas plus W7ACD on double hop. K4KYL, also in Tenn., reported "E" to Mass., Col. and Mo. and "EE" to Wash. and Ore. that evening 2125-2200 EST. W8, 9 and 0 logs show that they worked everything within range and east of Colorado from 0800 till 1254 EST. As for the west coast, between 1605 and 2000 PST Cal., Ore., Wash. and VE7 stations worked Col., Idaho, Mont., N.D., Tex. and double hop to Tenn. From 2130 until 0115 or later conditions were good up and down the west coast and logs from British Columbia, Wash. and Oregon show lots of work to Cal. and Nev. More Es in Japan -- JA8FY says it lasted from 1130 to 1143.

232 July 8 - This was chiefly an aurora date with just a mite of "E" thrown in. Earliest reports came from the west for a change, with such stations as VE7AQQ, W7INX and W7ZOW working each other from 0635 till 0806 PST. At just about this time (0955-1053 EST) aurora was reported by stations in Wisc., Mich., Ill. and Tenn. W4IKK heard buzz on WWI's signal all the way from 1005 to 2150 EST, and picked up amateur calls from W3, 8 and 9 1415-1512. About 1600 CST or so fellows began to get home from work, and activity on 50 Mc. picked up. It never did get too high, but a good many contacts were made between then and about 2210. Between 2249 and 2324 EST signals sounding like sporadic-E rather than aurora were heard over these paths: Ill. to northern N.Y., and Tenn. to Maine and N.Y. Out west, Wash.-Ore. to Cal.-Ariz. was open on "E" from 1812 to 1900 PST.

218 July 9 - The Es clock finally ran down for the eastern U.S., but W6s enjoyed three openings. Between 0840 and 0935 PST it was Cal. to Wash.-Ore., and 1745-2135 they worked Texas and N.M. Then the Wash.-Ore. to Cal.-Utah circuit opened once again about 2133 to 2255. JA7EV heard further sporadic-E 1407-1427 JST. VK3ALZ spotted aurora australis at 2200 his time (1200 GMT or 0700 EST). No signals were heard, however.

208 July 10 - Just particles of Es. Roughly 0945 to 1112 EST there were spotty openings from Texas to Tenn. and Mich. A little later at 1145 it was Mich. to Col. At 2145 PST Cal. to Ariz. opened up. VK3ALZ heard VK3AZY via aurora at 1830 EAST (0830 GMT). The buzz lasted till 1900.

203 July 11 - At 1232 PST W6BJI heard W7MKW in Olympia, Wash. Between 2238 and 2330 EST there was a fair Es opening between W1 and 2 and Ill., Mo., Miss., Ark. and Tenn.

188 July 12 - Between 1020 and 1407 EST there were fair to good Es conditions between Fla. and Ala. on the south and W1, 2, 3, 8 and 9 on the north. 1900-2020 EST it was Nova Scotia to Pa. and Ohio.

191 July 13 - 0908-1055 EST there was Es from Tenn. to W1, 2, 9 and 0 plus Texas. Other paths noted were Fla. to Ill. and Ohio to Texas. At 0925 MST there was a brief Ariz. to Texas opening. Between 1459 and 1930 EST things were good between Fla. and W2, 3, 8, 9, 0 and Texas.

182 July 14 - Looking first at the west coast, W6s were favored with a bit of Es between 0834 and 1005 PST. First states to come through were Ariz. and Col. Then it was Idaho, Utah and Wyo. From 1312 till 1643 Neb., Mont., Wyo. and VE5 were coming in to Cal., and Ore., Mont. and Idaho worked Col. and Tex. 1525-1645. Over east, the morning saw spotty Es between 0943 and 1155 EST. Some of the paths were: Ohio to Tex. and Fla., Pa. to Okla. and Fla., Mo. to Fla.

W9PNE of Lancaster, Ill. had an interesting experience at 2047 CST. After monitoring a dead band for 30 minutes, he suddenly heard two fluttering signals -- a W6 and a W0. After a few seconds his boys who were playing in the yard spotted a satellite passing over just to the west of them. W9PNE watched it for a minute and then returned to find the band just as dead as before. Satellite bounce, maybe?

181 July 15 - The period's last day brought with it a rather good evening Es opening -- more like those back at the beginning of the month. From 1616 till 2210 EST W1, 2, 3, 4, 8, 9 and 0 (plus Miss. and La. W5 and VE3) stations worked all of each other that were within sporadic-E range. The band dropped out for New England around 1946, but the W5FHS beacon came back in at W1IGE about 2139.

On Two Meters

July 8 - This was the (almost the only) date for aurora this period. It featured an opening which was in full swing long before most fellows got home from work. In fact, W1OAX, W8EHW, W9AAG and W9ZIH contacted one or more of each other during lunch time. After this it was just a matter of activity. W1, 2, 3, 4, 5 (W5RCI in Miss.), 8, 9 and 0 (only Iowa, it seemed) were all in on the fun. This was a southern affair for sure, and W4LNG in Atlanta, Ga. heard W5RCI and worked W4WNH between 1711 and 1717 EST. The writer must, it seems, claim responsibility for keeping a number of western Tenn. and northern La. stations off the air for this one -- he was giving a PRP pep talk in Memphis that evening! After the meeting, a blue-white auroral glow was spotted from W4HHK's back yeard, but the signals had already faded away. In the northeast and midwest activity lasted somewhat later; reports of 0100 to 0130 the next morning were fairly common. "Across the pond," DL4WW (ex-W3YHI) observed his first aurora signals from Ramstein, Germany. OZ3NH was worked and GM3LAV was heard between 2156 and 2222 GMT (1656-1722 EST). A little later north Germany stations were heard working into G and SM. SM6BTT first heard the buzz on the Dresden TV station at 1700 GMT. Then between 2220 and 0217 he logged a long list of SMs, DLs, and OZs.

July 9 - W2ORI heard aurora on W2CXY at 1915 EST. That was it.

July 15 - K2PRR noted a bit of buzz on W1REZ between 1746 and 1800 EST.

FCC PROPOSES C.W. SEGMENTS FOR 50 AND 144 MC.

In response to a request from ARRL, the FCC has issued a notice of proposed rule making seeking comments on the establishment of 100 kc. segments exclusively for c.w. at the low ends of the 50 and 144 Mc. bands. This is of special interest to PRPers because the League based much of its argument in favor of the proposal on contributions to the art made by amateur groups such as ours. The text of the League's proposal and the Commissions notice appear on pages 54-55 of August QST. Perhaps you will wish to express your own views on this matter directly to FCC, Washington, D.C. by August 29th so that they may know the extent to which the League's proposal is supported by amateurs.

THIS MONTH'S CERTIFICATE WINNERS

Congratulations to the following stations who have qualified for our PRP Award:

W4FWH W4LNG W9PNE JA3GR VK3AHL

FROM THE IGY CALENDAR

Regular World Days for the next three months are as follows: August 7, 12, 14, 15; September 6, 13, 14, 20; October 10, 11, 12, 13. Unusual meteoric activity is forcast for August 7, 12, 14; October 10.

With 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE ARRL PRP IGY NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

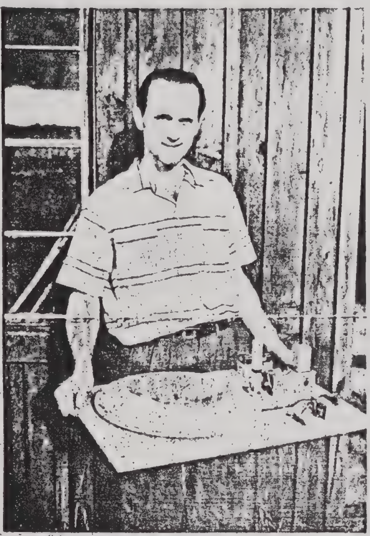
NUMBER 21 SEPTEMBER, 1958

FEATURING:

TWO MORE SCHEMES FOR AUTOMATIC KEYING

PROPAGATION CALENDAR, NEWS AND NOTES

BONUS MAP SHOWING MAGNETIC EQUATOR



W4HHK of Collierville, Tenn. holding the auto-keyer which is described in our lead article. Photo by W1VLH who certainly enjoyed his visit last month with well-known Paul and "DB".

TWO AUTOMATIC KEYERS

During the past month, the writer turned up two more systems for automatic transmitter keying. As a matter of fact, these schemes are just about as different from anything described in the past as they are from each other. If you're interested in this sort of thing for a beacon station, for CQing or meteor scatter schedules or for any similar purpose, we think you'll find these ideas worth considering.

A rather unique "light beam" keyer built and used by W4HHK is shown in the photo to the left. The wheel was made from a familiar 16-inch transcription disk, but those dots and dashes cut near its edge aren't followed by the usual wiper blade. Instead, a small flashlight lamp is mounted above the wheel and a "solar battery" is set beneath. As the openings for dots and dashes pass between them, a small voltage is generated by the silicon cell. This voltage, boosted by a two-stage transistor d.c. amplifier (circuit furnished by the solar battery company), closes the relay which keys the transmitter.

Here's another Tennessee v.h.f. man -- Bill Bearden, W4IKK, from Signal Mountain shown with his SX-73 and "bug". The latter isn't there just for show; Bill makes no bones about c.w. being his favorite emission. Not in the photo are a 4-250A kilowatt and tower-mounted long yagi for six meters. A well-timed Es opening during his visit gave the writer a good chance to try them out.

The most obvious advantage of this system is the absence of any wear-producing wiper arm which often tends to get out of adjustment. The only drawback has turned out to be the need for rather frequent replacement of the small bulb. Incidentally, Paul pointed out that even the tiny lamps now available are too large a light source "as is" for clean and precise keying. He found it necessary to tape over all but a narrow slit on the bulb's surface to remedy this situation.

Instructograph Conversion

Shelby Ennis, W4WNH, was kind enough to send along the following information on how he has converted a popular and inexpensive code machine for auto-keying: "An Instructograph Code Teacher can very quickly be converted to an automatic keyer, and not even a relay is required (unless you are breaking high current). This system has a few more bugs than a good code wheel, but the modification does no harm and you can make as many different tapes as you wish.

"Remove the front motor mounting screw on the left as the machine faces you. Cover the empty take-up reel with one or two layers of rubber tape. Then gently remove from your XYL's sewing kit a spool of thread with a diameter of about one inch and cut the flange off one end. Take a bolt or rod, put on a few washers and the spool, and insert it in the hole left by the removal of the motor mounting screw. Attach a rubber band to the top of the bolt and to the right hinge or to one of the key terminals. Experiment to see what tension will work best. Hook the keyed stage to the two key terminals at the back.

"The tapes are made of regular 3/4-inch plastic tape. A piece of tape of the approximate length is placed sticky-side to sticky-side against another length of tape. For a 3X2 CQ, three feet is about right. Cut or punch out your text, and join the two ends together, forming a continuous belt. Adjust the contact spacing, and trim the characters horizontally and vertically as necessary.

"A piece of wire used to hold the spool vertical will improve the speed control. If the contacts close when they should not, add a piece of tape there on the belt. If the belt has a tendency to rise, a piece of paper may be taped beside the speed control knob to hold the belt down. Many refinements are possible, of course, but the conversion is simple, and the Instructograph can be put back into its original form in less time than it takes to read this."

The sample tape which Shelby sent along 1/2-inch dashes with the rest of the lengths and spacings set accordingly. Such tapes can be adjusted to key between 10 and 25 w.p.m. with the Instructograph's control knob. Shelby also notes that these machines can be bought used from the manufacturer for around ten dollars.

PROPAGATION CALENDAR

Six Meters in July

Sporadic-E again claimed the spotlight during the second period of July. Unlike last year, Es seemed to be more abundant during this month than in May or June. Openings were distributed quite fairly over the nation. We'd say the best days were the 23rd, 30th, and particularly the 31st.

192 July 16 - There was a relatively small Es opening between the Washington state area and California between 0815 and 0835 PST. Report was received of an opening in Japan, 1111-1215 JA-time.

190 July 18 - About 0920 PST, California stations heard signals from South Dakota. There was an interchange of work between Oregon, Arizona and California between 1215-1300 PST, and W6s also had a good line into Texas at this time. The northeast and northcentral stations were able to work down into many of the southern states between 1100 and 1448 EST. W5s exchanged reports with numerous W4s and W0s later in the evening, 2145-2345 EST.

~~195~~ July 19 - Midwestern and western locations had quite a few Es paths during the morning. Between 0730 and 1000 PST, Californians were able to work into Texas and Oklahoma while stations in Colorado, Missouri, Illinois, Kentucky got in some work. The evening hours, 205 1815 to 2230 CST, favored Es paths between W4s, 5s, 6s, and 7s. Across the pond, VK4NG heard F2 sigs from JA stations between 0540 and 0945 GMT. Japanese hams also got in a small amount of Es work around 1845 JA-time.

200 July 20 - This was indeed a good day. Activity started in the east about 1030 EST and lasted until approximately 1400. North east and central states again were able to work to the south and into Cuba. It would be safe to say that this was a nation-wide opening with Es signals staying in until approximately 1900 EST in most parts. W5s in Texas and New Mexico heard XE1GE during early afternoon and there was some east coast-west coast double hop thrown in for good measure. Another F2 opening between VK4NG and Japan was noted along with some more Japanese Es work, 1800-1900 JAST.

209 July 21 - Northeast, central and southeastern stations got a chance to QSO each other between 1911 and 2200 EDST. Tennessee and South Carolina experienced a clear cut opening to the Nova Scotia area during this time. 1250-1400 JAST saw another Japanese Es opening.

[Sep 58]

214 July 22 - It looks as though the band was open in the Texas area for most of the day. Our earliest report is 0750 CST; our latest, 2200. At any rate, all states east of Colorado fared very well during the evening hours and Es paths were open for this district in all directions.

213 July 23 - One of the best days of the period! We won't even attempt to give you a breakdown of what was what at what time! Es activity seemed to start around 0930 EST, and lasted until very late evening. Sporadic-E paths were open in all directions and there was a good deal of double-hop work between east and west locations during late morning. Western stations were able to get into the act, for the most part, earlier in the day and the openings held up well into the evening. East coast activity seemed to be concentrated in the evening hours, with only a few reports coming through for morning work. VK9XK got in some TE work with Japan at 2045-2115 EA time.

228 July 24 - The day started out (0600 PST) with a good opening along the western seaboard which lasted until midafternoon. All locations west of Texas and New Mexico were affected. From noon EST until 1400 Florida stations were able to work into the northeast. A similar opening that extended to include W8s, 9s, 0s and 5s again occurred in the evening, 1725 to 2045 EST.

240 July 25 - No sporadic-E on this date but there was a trace of an auroral opening for the northeast between 1850 and 2220 EST. Japan stations did experience a little bit of Es around 1015 their time.

260 July 26 - A small opening between W1-land and Missouri-Florida areas occurred around 2250-2345 EDST. VK4NG heard some F2 signals from Japan at 0830 GMT.

261 July 27 - Oregon stations noted a small auroral opening into Washington just as the day began, 0005-0029 PST. The evening of the 27th afforded a little amount of A work for W1s, 2s, and VEs at two different times: 1625 to 1845 EST and 2100 to 2115. No sporadic-E!

290 July 28 - Es came back into the picture with a sizable opening for the western half of the nation during evening hours. Activity seemed to take place during the period 1900 to 2200 MST. No east coast opening was reported for this day although a couple of stations in Iowa did hear some eastern stations between 2140 and 2210 MST.

285 July 29 - Eastern stations south to Tennessee had a good opening into the W9 and W0 area between 2000 and 2230 EST. A similar opening had also occurred earlier in the day, 0800-0900 EST. A brief New Mexico-California path opened up between 1930-1950 MST, for the extent of west coast activity. JA stations ran into some Es around 2130 JAST; VK9XK heard TE signals from JA-land around 2155 EAST.

287 July 30 - Between the hours 0700 and 1000 PST there seemed to be a simultaneous Es opening all across the nation. Northeastern stations were working into Florida and Cuba. W8s and 9s were reaching to the west into Colorado, Idaho, Texas, New Mexico. W7s in Oregon were working stations in Colorado and Idaho. There was also some double hop between the Oregon area and Tennessee and Alabama. Activity faded out for most of the day but picked up again around 1800 CST. Stations west of Texas had it best during this opening but there was a small amount of work between W3s and 4s during early evening. California stations heard double-hop sigs from the Florida area.

288 July 31 - Operation in the morning (1000 EST on) seemed to be best for locations east of Texas. W5FXN and K5ABW, however, sent in a report covering Es work on their part from 1140 CST to 2400! They worked or heard stations in all directions but W6s, 7s, and 0s were in aboundance. A California-Texas opening was noticed around 1530-1730 PST. The evening claimed most of the honors, however. Activity started around 1730 EST and affected eastern and central states, for the most part. There was quite a lot of EE between the east coast and Arizona, New Mexico, Colorado. A good way to end the month!

Two Meters

The second two weeks in July werent very favorable for 2 meter DX. We didn't receive a single report of a good opening during this period, although a few aurora signals were heard on various nights. Here's the way it shaped up:

July 17 - W1REZ worked W8WEN on aurora at 2130 EST with a NW antenna heading. No opening resulted.

July 18 - Only one aurora report was received for this date. W9GAB and W0SMJ were heard by W8PT, 1822-1831 EST.

July 19 - Conditions improved just a little bit. There was some auroral activity between 1610 and 1812 EST. W3ARW worked W9ZIH during this time. W2ORI and W8EHW each heard a few W1s, 2s, 3s, 8s, and 9s, and the latter also got A signals from W0RAP. W8BAX heard the buzz on 1s and 2s.

July 20 - W2ORI heard a couple of W1s and W2s between 0022 and 0052 EST.

July 21 - W1REZ noted aurora on W1AZK as early as 1800 EST. What little activity there was, however, took place later in the evening between 2314 and 2345. W2ORI, W3GKP, and W8PT got in on this one.

July 27 - Again we received a few scattered reports of A work. W2LWI worked and heard a couple of W1s and W2s, 1728-1800 EST. W8BAX received W2AZL at 1735 and heard W1REZ at 1910. W2TTM heard a couple of aurora signals between 1640 and 1740 EST. That's all!

July 28 - Although the month was poor aurora-wise, meteor scatter skeds continued faithfully. W1REZ had good luck with reception of I signals from W5JWL at three different times during early morning hours of this date.

July 31 - W2EQO reported a good inversion between 2125 and 2250 but no aurora! That was it for the last half of July!

The August Six-Meter Picture

The first half of August was noteworthy in three respects -- it brought with it the season's first TE propagation, two very good sporadic-E openings and absolutely no aurora. The best Es dates were the 1st and 7th, the latter being somewhat better and including double hop.

274 August 1 - Between 0950 and 1400 EST the eastern half of the country enjoyed good Es conditions. During the early hours W1s, 2s and 3s worked into W4 and La. The rest of the time there was work between 8, 9 and 0 and Texas and western W4. At 1030 PST, W6-Texas opened briefly. The best was yet to come, however. Between 1730 and 2215 EST W1, 2 and 3 worked into W8 and 9. Toward the end the band also opened to W5 and northern W4. Only the eastern half of the U.S. (plus VE1 and VE2) was affected. On the opposite side of the world, VK4NG and VK9XK worked Japan via TE between 2020 and 2110 EAST.

254 August 2 - Off and on from 0815 till 1300 PST W6s worked into Texas, Okla., Kans. and Mo. Neb. to Ariz. opened at 1016-1039 CST. 1220-1245 CST saw some "long single hop" from La. to Cal. and Nev. Evening brought a minor Es opening from Fla. to W8 and W9. Japan had evening Es also from 2007 till 2232, and VK4NG reported more TE traces at 2020 his time.

237 August 3 - These few brief sporadic-E openings weren't even as impressive as they'll sound: 0915 EST -- Fla. to Texas, 1135 CST -- Iowa to N.Y., 1943-2040 EST -- Fla. to Puerto Rico, 2008 CST -- Tex. to Fla. and 2330 MST -- Col. to Ohio and Ind. JA-land had much better Es shots morning, noon and afternoon. VK4NG worked VK9XK on trops early in the evening and then more JAs on TE -- 2130-2345.

216 August 4 - More scattered bits and pieces of Es! Between 0925 and 1340 EST, there was work between W1 and 2 and W9 and 0, plus such paths as Wyo. to W8, and Tenn. and Ill. to VE4 and N.D. Later on, W1s worked Iowa while Kansans reported N.C. about 2135 EST. 2218-2246 it was VE2 to Iowa and Neb. From 2100 till 2250 MST Wyoming stations reported W8, 9 and 0. JA7EV noted Es 1545-1648, while JA8FY reported it 0905-0950. VK4NG and VK9XK worked JA TE 2120-2230 and 1900-2205, respectively.

221 August 5 - During the early hours (0042-0139 EST) W4IKK reports VE4, Wyo., S. Dak. and Mont. Between 1030 and 1130 EST W1s and 2s worked Fla. In the evening there were several small openings and several paths. 1940-2000 EST W2 and 3 worked Kans. and Mo., Ga. opened to Minn. and Tenn. worked Wis. 2029-2030, it was Mich. to Mont. and Okla. 2143-2145 there was a trace of Tex. to Okla. The JAs had Es 1115-1248 and 1333-1340 and TE to VK4NG 1915-1925 his time.

239 August 6 - Between 1152 and 1245 EST W4AYV in Fla. reported Mass. stations. From 1345 till 1405 CST W5FXN picked up OA3AAE 9-plus for the first time in some while. 1650-1752 VE7AQQ worked into the San Francisco area. 2217-2313 EST W1s worked Ark. and Miss., while K0IGM in Iowa heard W4FWH in Ga. at 2245 CST. VK4NG's JA contacts on this date were via F2 -- 1850-1930 EAST.

235 August 7 - Between 0841 and 0845 EST W4RMU heard N.Y. and VE3 stations. That evening was the big one, however. From about 1906 EST till 0345 the next morning, W1s 2s and 3s worked into W8, 9 and 0 plus Okla., Miss. and Texas. There was double hop to Col. and Wyo., and also Tex. and N.M. (from VE2). 1905-2143 PST California stations heard Texas, Ill. and Ohio. 1755-1845 MST it was Ariz.-Tex. Northern W4 was in on this one, also, and W4FLW called it "the biggest and best August opening since I started on six meters in 1950."

236 August 8 - All the way from 0942 EST till 1500 it was VE1 and 2 and W1, 2 and 3 working W8, 9 and 0 plus the northern 4s and some of the 5s. The 4s and 5s also made a few contacts with north-central stations. 0858-1056 MST Wyoming sixers worked W8s on single hop and W3s on double. We also spotted two evening affairs -- 1820-1905 EST W1 and 2 to Ala. and Tenn., and 2324-2332 EST N.C. to Okla. In Europe there were a number of Es reports between HB9QQ, SM5CCH, OH2HK and SWL-F4. Also, VK4NG and VK9XK worked Japan via TE 1900-2230 their time.

225 August 9 - Between 0820 and 0843 PST W6s worked into Texas. 0940-1050 CST W5FXN reported not only California but Cuba and Mexico City. 1020-1355 EST W1 and VE2 were open to Tenn., Miss., S.C., Ala., W9 and W0. CO2ZX heard Texas stations between 1848 and 1923 EST. K4IEA in Va. heard Minn. at 2030 EST. We also have an Iowa-Ohio report for 2150 CST. There was JA8 to JA5 and 6 Es from 2048 JST till 2250 and VK-JA TE between 1940 and 2050 Australian time.

222 August 10 - Just two reports of U.S. Es -- 1223-1227 EST from Fla. to Ohio, and 1527-1635 MST from Arizona to Texas. JA7EV and JA8FY reported several sporadic-E openings, the best being 1625-1820 JST. VK4NG and VK9XK both worked more JA TE from 2055 till 2200 EAST.

225 August 11 - W6s had more of a share of things on this date. They started with a brief opening to Col. 0807-0830 PST. Then between 1745 and 1936 PST there were north-south contacts between Cal. and Ore. plus VE7 and also some shorter VE7 to Ore. ones. We have a brief report of more similar work around 2030. From 1922 till 2047 CST, Col. and Tex. stations worked into Ky., Tenn. and Ala. Ill. to Nev. was also working. 2015-2115 MST there was

225

N.M. to W9 and 0 and also Col. to W4 and 9 Es. Also that evening, DU1GF heard JA six meter stations for the first time this season. Meanwhile, VK4NG worked JAs on F2 from 1830 till 1940 and TE 1951-2215 EAST. VK9XK's results were a little different -- he worked the TE from 2145 to 2205 but heard nothing 1800-2000 and 2045-2145. Add to this some JA Es (0920-1046 and 2035-2050 JST) and you have quite a day.

222 August 12 - This date saw several more small openings that almost take longer to describe than they took to happen. 0710-0737 PST Californians worked Texas and N.M. From 0915-0924 EST it was the Mich. area to W1 and W3. Between 1622 and 1813 EST there was an off-and-on opening between Fla. and Ohio, Mich., Ind., Tenn. and the Carolinas that at least one station took for ionospheric scatter. Reports on hand bear it out as Es, however. At 2008 PST Ore. opened briefly to Idaho. Then 2055-2130 MST Wyo. stations worked into Texes, Okla. and Ark. for the last U.S. shot of the day. CX1AQ noted his first reception this season of the N.B.S. beacons; this was at 2307-2313 and there was plenty of TE flutter. JA8FY reports Es to JA1, 3, 4 and 6 from 1800-1845 JST. VK4NG worked JAs on F2 1957-2014 EAST.

226 August 13 - Just one Es opening was all there was. Between 0855 and 1150 EST the Ohio-Mich. area worked into New York, Texas and La. Two other paths spotted were Okla.-Va. and Iowa-Ga.

235 August 14 - Nothing at all in the U.S., but LU7AT heard the CE8AE beacon at 2150 LU-time. Also, VK4NG was in on a sort of combination F2-TE opening to Japan from 1825 till 2100 his time. VK9XK was in on the TE part 2013-2100.

231 August 15 - All we have from the States is a single heard report; W4MS in Fla. heard K5JFN in San Antonio, Tex. at 0800 CST. To the south things were most interesting, however. XE1GE heard his first TE of the season; between 2005 and 2110 CST Jeff worked LU1ABF, LU2DGW and LU6DBE and heard the N.B.S. beacons and CVJ. He, in turn, was heard by both LU7AT (2150 LU-time) and OA4C (2140-2155 EST). In the opposite hemisphere, DU1GF and VK4NG worked JAs at 2048-2114 and 1950-2100 their times, respectively. JA7EV also noted Es between 2137 and 2258 JST.

The Two Meter Band - August 1 to 15

We thought that the second two weeks in July were exceptionally dead on two until we took a look at the August reports. Not only were there no reports of good auroral openings; there were no auroral reports! However, information came in on the results of numerous meteor scatter schedules over the country. Observers also noted some very good tropospheric openings on the 2nd, 3rd and 9th. With the exception of the tropo news and reports of I skeds, here's the sum total of propagation on 144 Mc. during the first period of August:

August 3 - At 0010 EST, W2ORI heard an unidentified carrier coming in from 335° on aurora, signal strength 3F.

August 14 - K2PRR heard W2WHX between 1737 and 1750 EST. At times, he said, there were traces of A on W2WHX's sig up to 50%. Signal strength was 4F.

NEWS AND NOTES

Why No W-VK3 Work?

As noted previously in these pages (PRP News No. 18, p.2), VK stations in the northern parts of Australia certainly had much better results working U.S.A. stations than did their fellows to the southeast. In fact, reception of W6NLZ by VK3ALZ on May 10th was the only evidence of 50-Mc. W-VK3 propagation all last season. Norman Burton, SWL-F1 of Revesby, N.S.W., is one of our observers who has wondered why this should be so. Stations in his area hear Japan, the Philippines and New Zealand, but not the U.S.A. nor Hawaii. Says Norman: "As to why, the only theory I have at the moment (and this is a very slim one) is that the great circle path to this area passes through an area in the Pacific notorious for poor propagation of radio signals. I am not at present exactly sure where it lies, but have inquiries in hand about it. The area is well known in marine (both military and civil) circles. The theory I have is that this area is our last point of ground reflection from the U.S.A. to here, and that the area is acting true to form and just not propagating to here." We wonder whether any PRP observers know anything about such an area. If so, we'd appreciate hearing from you.

Looking at a map, another possibility occurred to the writer. Following the great circle path from northeastern Australia (where many contacts were made by W stations) we note that a signal headed for the States would be down near the ground as it crossed the geomagnetic equator. This would also be the case for signals from New Zealand (also a well-worked path). However, signals from VK3 would be up in the ionosphere while crossing the equator. Remembering how much effect the latter has on north-south propagation, makes one wonder if there might be some connection here.

International Prefixes

Observers often ask us the whereabouts of various stations having three- and four-letter call signs. These are usually commercial in nature, and can often be located with the aid of the table of International Prefixes included in the Miscellaneous data chapter of all ARRL Handbooks. Take station CCOH for example. The table shows that calls between CAA and CEZ are Chilean. Unfortunately, this doesn t necessarily mean that CCOH is in Chile. Only the three-letter calls are fixed stations; those with four letters are usually ships and might be anywhere. Unfortunately again, it seems to be the ship stations which are received most often in the 50 Mc. region via their harmonics. The table may, however, be of help in some cases.

Certificate Winners

Hats off to these nine stations who earned themselves PRP Award Certificates during the past month!

W1OAK
W2EIF
K2HWC
K2PRR
W3TFA
K4IEA
W7MTM
K0OEJ
JA2IF

Schedules And Such

Observer HB9QQ wants it made known that he transmits every day on 50.16 Mc. at 1630-1700 GMT (1130-1200 EST) and later if the band is open.

Mickey Mozoomder, VU2CQ, writes that there are now three stations on 50 Mc. in India. The newcomer is Rev. Father Conesa, VU2SX, of Bombay, who runs 25 watts phone and c.w. on 50.808.

VK9XK of Port Moresby, Papua Territory, is still looking for stations on six each Saturday at 2400 GMT. He has 100 watts on 50.005 Mc. and has heard the west coast in the past.

Stew Sparks, K4GYZ, of Atlanta, Georgia, would like some scatter schedules for the late evening hours. Any takers please write to him at 1713 Cahoon Street.

H.F. Meeting Ground?

There's been some interest expressed lately in setting some h.f. frequency where v.h.f. men could meet to compare results and set schedules. A number of stations are already using 14.095 Mc. for this purpose; others feel that a spot in the 15-meter band might be more suitable. Let us know your sentiments, and we'll publish the score.

More Beacon News

Hal Torgerson, LA2AD, writing from the Norwegian Institute of Technology, reports thah their 50.3-Mc. beacon will be back on the air shortly. This has been off the air since May 16th, but will soon resume the 0500-1900 GMT schedule. Automatic keying of call sign (LH2A) and QTH taking 45 seconds followed by an interval of 15 seconds will be transmitted. LA2AD now has his own 50-Mc. permission, and will ocassionally work the same rig under his own call.

VK3ALZ has it on good foundation that a new scatter research station is being set up in southern New Zealand beaming toward the south pole. Frequency is 52.6 Mc. This should be a dandy aurora check for ZLs and VKs.

From The IGY Calendar

Regular World Days for the next three months are as follows: September 6, 13, 14, 20; October 10, 11, 12, 13; November 4, 10, 11, 18. Unusual meteoric activity is predicted for October 10.

With 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE ARRL IGY PRP NEWS

MONTHLY BULLETIN OF THE ARRL-IGY PROPAGATION RESEARCH PROJECT

NUMBER 22 OCTOBER, 1958

SCANNING THE ISSUE=

W6KUH SHOWS HOW TO PLOT IONOSPHERIC CYCLES

W5FHS TO SUPPLY IGY CONFIRMATION CARDS

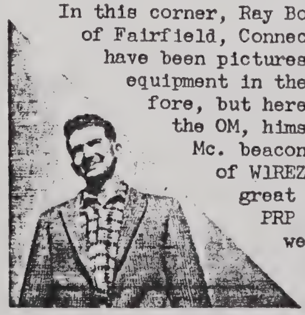
V. H. F. BEACON STATIONS SUMMARIZED

220 MC. WELL WORTH TRYING

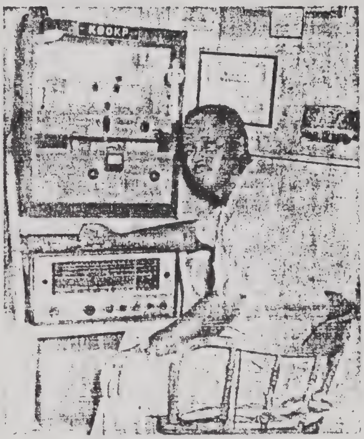
Dr. Jay Bush, K6OPD, of Lancaster, Calif. came through this month with some interesting notes about a band which many of us have overlooked in the past. He points out that there are about 40 active 220-Mc. stations in the Los Angeles area, and that good DX can be worked on 220 with average power and antennas.

For example, on August 23rd, W6WRE set up portable on Mt. Patosi 20 miles southwest of Las Vegas, Nev. Between 1600 and 1815 he worked eight stations in the Los Angeles area. This is a distance of 225 miles over some very rough terrain (three mountain ranges right in the way). Signal reports were all Q5 and S4 to 9. W6WRE's rig was an 832A running 25 watts input. This was also the average power of the home stations (with the exception of K6GKX, Long Beach with 65 watts). The antenna headings were not direct, the signal being reflected through the San Bernadino Mountains.

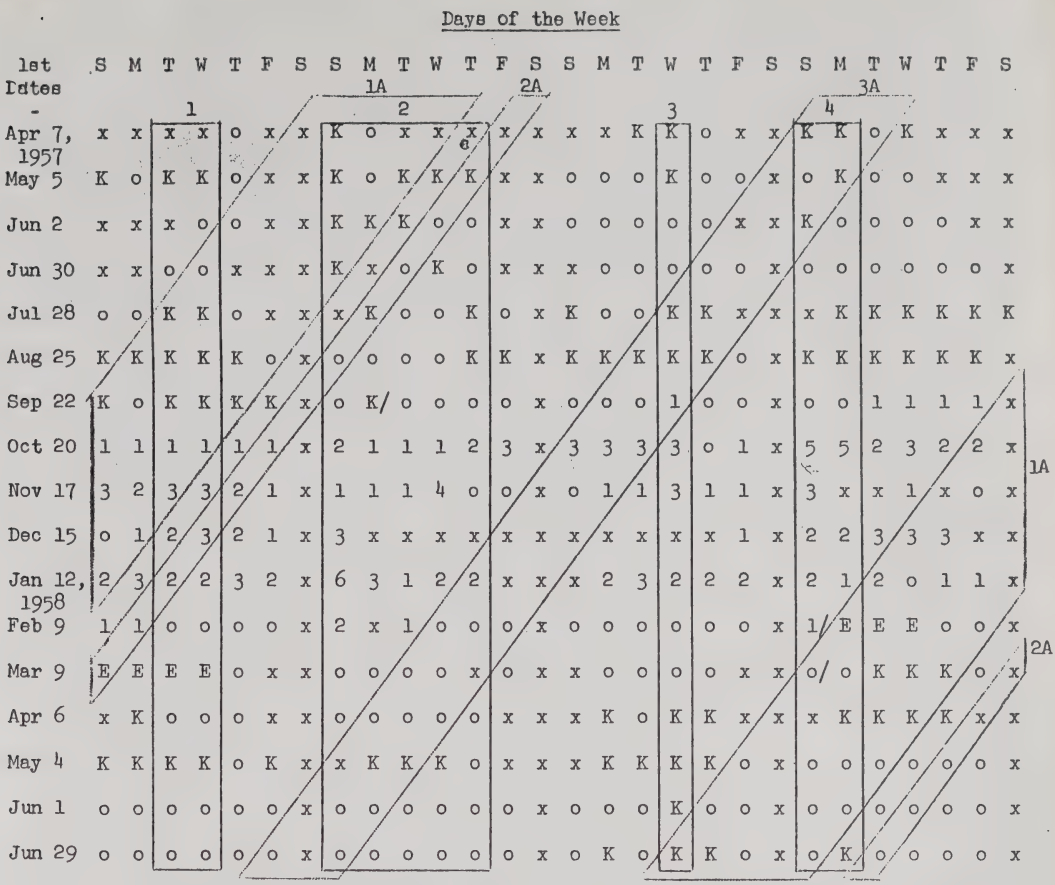
Obviously, you don't need a location like Mt. Patosi if there aren't 7000-ft. hills in the way. Here in Connecticut, W1HDQ has been on 220 in a big way recently with the writer's 4X250B amplifier (Feb. '57 QST) and a 66-element beam. In the V.H.F. QSO Party Ed worked no less than 12 sections on 220 -- the same number that he did on 50. They weren't all the same twelve, either!



In this corner, Ray Bohmer, W1REZ, of Fairfield, Connecticut. There have been pictures of Ray's equipment in the PRP News before, but here, finally, is the OM, himself. The 144-Mc. beacon transmissions of W1REZ have been of great help to the PRP program as well as to many an individual two-meter operator.



Here are two 50-Mc. PRP observers from Denver, Colorado. Above is Bill Miller, K0OKP, at the key of his station. An SX-62 does the receiving, and the rack above it holds the 2E26 rig with its power and audio sections. On the air since Feb. '58, Bill has earned a PRP Certificate. Below we see Walt Gardiner, K0CLJ, with PRP log form in hand. Walt is a four sticker winner, having been with PRP since way back last year. Shown with him is a 6C4-5763-6146 rig which has since been replaced with a 100-watt 5894 unit.



Days of the Week

1st Dates	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Apr 7, 1957	x	x	x	x	o	x	x	K	o	x	x	x	x	x	x	x	K	K	o	x	x	K	K	o	K	x	x	x
May 5	K	o	K	K	o	x	x	K	o	K	K	K	x	x	o	o	o	K	o	o	x	o	K	o	o	x	x	x
Jun 2	x	x	x	o	o	x	x	K	K	K	o	o	x	x	o	o	o	o	o	x	x	K	o	o	o	o	x	x
Jun 30	x	x	o	o	x	x	x	K	x	o	K	o	x	x	x	o	o	o	o	o	x	o	o	o	o	o	o	x
Jul 28	o	o	K	K	o	x	x	x	K	o	o	K	o	x	K	o	o	K	K	x	x	x	K	K	K	K	K	K
Aug 25	K	K	K	K	K	o	x	o	o	o	o	K	K	x	K	K	K	K	K	o	x	K	K	K	K	K	K	x
Sep 22	K	o	K	K	K	K	x	o	K	o	o	o	o	x	o	o	o	1	o	o	x	o	o	1	1	1	1	x
Oct 20	1	1	1	1	1	1	x	2	1	1	1	2	3	x	3	3	3	3	o	1	x	5	5	2	3	2	2	x
Nov 17	3	2	3	3	2	1	x	1	1	1	4	o	o	x	o	1	1	3	1	1	x	3	x	x	1	x	o	x
Dec 15	o	1	2	3	2	1	x	3	x	x	x	x	x	x	x	x	x	x	x	1	x	2	2	3	3	3	x	x
Jan 12, 1958	2	3	2	2	3	2	x	6	3	1	2	2	x	x	x	2	3	2	2	2	x	2	1	2	o	1	1	x
Feb 9	1	1	o	o	o	o	x	2	x	1	o	o	o	x	o	o	o	o	o	o	x	1	E	E	E	o	o	x
Mar 9	E	E	E	E	o	x	x	o	o	o	o	x	o	x	x	o	o	o	o	x	x	o	o	K	K	K	o	x
Apr 6	x	K	o	o	o	x	x	o	o	o	o	o	x	x	x	K	o	K	K	x	x	x	K	K	K	K	x	x
May 4	K	K	K	K	o	K	x	x	K	K	K	o	x	x	x	K	K	K	K	o	x	o	o	o	o	o	o	x
Jun 1	o	o	o	o	o	o	x	o	o	o	o	o	o	x	o	o	o	K	o	o	x	o	o	o	o	o	o	x
Jun 29	o	o	o	o	o	o	x	o	o	o	o	o	o	x	o	K	o	K	K	o	x	o	K	o	o	o	o	x

Figure 1-- 28-day chart showing actual reception of various stations (see text) by W6KUH during the period April 7, 1957 through July 26, 1958. Dates shown are those of the first day on each line. Note that each date follows the one above it by 28 days, and the one above it and to the right by 27. The vertical "peak intervals" were derived by the analysis in Figure 2, while the slanting, A-numbered ones come from Figure 3.

A-	2	1	3	3	1	0	0	4	2	2	2	2	0	0	1	0	1	3	1	0	0	2	3	1	2	1	1	1
B-	1	2	1	2	4	1	0	0	2	2	2	2	1	0	2	4	4	2	4	2	0	2	2	4	3	2	1	0
C-	3	3	2	1	1	5	6	1	1	1	1	1	4	5	2	1	0	0	0	3	5	1	0	0	0	2	3	4
D-	66	33	75	60	20	0	-	100	50	50	50	50	0	-	33	0	20	60	20	0	-	50	60	20	40	33	50	100
E-	50	50	66	83	83	17	0	80	80	80	80	80	20	0	60	80	100	100	100	40	0	80	100	100	100	60	40	20
F-			X	X				X	X	X	X	X						X				X	X					
G-	X	X			X										X	X	X		X					X	X	X		
H-				1		X	X			2			X	X				3		X	X		4				X	X

Figure 2-- 28-day interval analysis of reception between April 7 and August 31, 1957. Each column represents a separate interval. The rows are as follows:

A - Number of openings observed.
B - Number of no-openings observed.
C - Number of days of no observing.
D - Quality Factor -- per cent of openings to total number of observations.
E - Value Factor -- per cent of observations to total days in the interval.
F - Good Intervals -- those with Quality and Value Factors both 50 or more; their sum must be 130 or more or there must be three such intervals in a row.
G - Bad Intervals -- those where the Value Factor is 50 or more but the Quality Factor is less than 50.
H - Intervals of No Value -- those having a Value Factor less than 50.

A-	1	2	1	2	2	1	2	3	2	2	3	2	2	1	0	1	1	1	2	0	0	2	2	2	1	0	1
B-	2	1	2	0	2	4	2	0	2	1	1	0	2	2	2	1	3	2	3	4	4	1	2	1	3	3	2
C-	3	3	3	4	2	1	2	3	2	3	2	4	1	2	3	3	1	2	0	1	1	2	1	2	1	2	2
D-	33	66	33	100	50	20	50	100	50	66	75	100	50	33	0	50	25	33	40	0	0	66	50	66	25	0	33
E-	50	50	50	33	66	83	66	50	66	50	66	33	80	60	40	40	80	60	100	80	80	60	80	60	80	60	60
F-							X	X	X	X	X		X									X	X	X			
G-	X	X	X		X	X								X			X	X	X	X	X				X	X	X
H-				X					1A			X	2A		X	X							3A				

Figure 3-- 27-day interval analysis of reception between April 7 and August 31, 1957. Meaning of rows and columns is the same as in Figure 2.

[OCT 58]

First we shall look at short-term cycles of from 25 to 30 days. We do this simply by counting the number of times when one reception (a K entry on the chart) follows another by 25 days, 26 days, etc. Here are the results: 25-day cycle -- 4 cases of recurrent reception, 26 -- 7, 27 -- 6, 28 -- 8, 29 -- 6 and 30 -- 4. A 28-day tendency is indicated, but remember that these are short-term cycles only; they represent only two cases of reception in a row and not continuing cycles over a long period of time.

Figure 2 shows an analysis of the same data on a long-term basis for 28-day intervals. Figure 3 is the same analysis for 27-day intervals. Here, each interval is examined over its entire length. This amounts to going straight down the vertical columns of the April 7--August 31 portion of the chart for the 28-day case, and diagonally down and to the left for the 27-day one. As explained in the Figures, Factors of Quality and Value are calculated for each interval. Arbitrary rules are then used to decide whether an interval is Good, Bad or of No Value.

Comparing Figures 2 and 3 we find that the 28-day cycle shows ten day-intervals which are good, while the 27-day cycle shows only nine good day-intervals. These nine show a peak sum of Quality plus Value Factors of only 150, with several just making it to the 130 minimum. The 28-day cycle shows three day-intervals having values over 150 with one of 180. Furthermore, all the day-intervals in the 28-day group would stand by themselves, while five day-intervals in the 27-day group require the group-of-three rule to be good. From this it would seem that the 28-day cycle is the more valid. Good day-intervals for both cycles have been grouped into what we call "peak intervals". These peak intervals are numbered and drawn on Figure 1. Those from the 28-day chart appear as vertical groups and those from 27-day data run down diagonally to the left. It is interesting to note that 68 percent of the days common to both 27- and 28-day peak intervals were good days. Now let us see how well these predicted peak intervals hold up over the rest of the chart.

Between October 1st and March 2, 1958, four different things have been selected as cyclic evidence. They are: 1 -- reception of BBC-TV (London) audio on 41.5 Mc.; 2 -- BBC-TV video on 45 Mc.; 3 -- BBC-TV audio on 48.25 Mc. and 4 -- KH6s on 50 Mc. Oh yes, 5 is 1 plus 4 and 6 is 2 plus 4 (believe it or not!). The x still means no observing was done, and the o means none of the signals in question were heard. Both the 27- and 28-day peak intervals pass through some good days on these new paths. When the DX from KH6 on 50 Mc. is considered, however, the 27-day intervals missed all observed cases, while the 28-day intervals included them all. Thus it would seem that the 28-day interval held up for a longer time than the 27-day one did. Note that all of the observations listed here make no reference to the quality of the opening. It is believed that if this factor were included in the analysis, even more conclusive results could be obtained, but time and space do not allow it at the moment.

The period from the 3rd of March to the end of that month saw so much DX on 35.58 Mc. and none to Europe that only openings on one-way paging stations at 43.58 Mc. could be used as an indicator. Even these were mostly good the first half of the month and bad the last half, so that no value was given to them from a peak condition standpoint. They are indicated in Figure 1 by the letter E.

By the end of March, QRM on 35.58 Mc. from U.S. stations was low enough that observations on KUA217 could be resumed. It is interesting to see that three of the four 28-day intervals again fall right in the peak of reception, with the fourth just missing it. This latter good reception, however, is included in 27-day peak interval 1A. Also, the intersection of intervals 1A and 3 produced good reception in the middle of July, 1958, the month with the least DX in 1957.

This treatment is by no means exhaustive, and the idea is certainly worth further investigation. If, as it would seem, predictions of peak periods can be made on a 28-day cycle basis, it might help us to make time available for DXing when the DX is more likely to be around. Of course, there will always be openings which do not fit into this pattern, so there is no substitute for continuous monitoring. But try this 28-day method for yourself. You don't need to go into the calculation part if you don't want to. Just make up a 28-day calendar and mark the MUF to any location as often as you can observe it. See if the peak intervals don't lead you to the same conclusion as they did the author. One thing more -- notice how the little x's foul up analysis? If they were o's, all this would be much more significant. This is just one more place where negative loggings are just as valuable as positive ones. Don't overlook them!

YOUR PROPAGATION CALENDAR

Second Half of August Features 50-Mc. Es

This was an exceptionally good period for sporadic-E work with just a sprinkling of aurora on a couple of evenings. All parts of the country were favored with E openings at various times and during a few openings it looked as though activity were nation-wide. The 26th was a particularly good day for double-hop between California and Florida, with Texas as the mid-point. Added to this were quite a few reports of South American TE, as well as ZC4WR's reception of TE signals from ZE2JV. You can also add another TE path to the map sent out with the September News. This period saw the first notice of TE between KH6CCZ and ZK1BS in the Cook Islands. KH6CCZ worked or heard the latter station during late evening of the 16th, 18th, 25th, and 31st.

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1958

215 August 16 - This was a very good evening for sporadic-E, indeed. Things started to pop about 1820 EST and activity held up until at least midnight. All stations east of Colorado were involved and, in addition, there was a small opening between Colorado and the northwest around 2036 PST. G4LX heard CT1CO's signal at 1930 GMT. VK4NG received TE signals from Japan between 1015 and 1150 GMT.

211 August 17 - This afternoon saw evidences of aurora work between 1235 and 1625 EST. Another short A opening took place in the evening, 1830-1950. W1s, 2s, 3s, 8s, 9s, VE2s, and a few W4s took part. Our Swedish VSWL, Olof Karlsson, also heard some aurora signals during the evening. As for sporadic-E, the day started off with some Japanese work, 0920-0950 JST. U.S. activity took place mainly in the evening between 1845 and 2300 CST. W4s, 5s, 6s, 7s, and 0s (the west and south) exchanged RSTs during this opening.

218 August 18 - The Washington-Oregon area had a small opening into Arizona about 1855 to 1955 PST. TE took the spotlight on this date, however. LU9MA was heard and worked by W6ABN, W6NIT, K6PBW, W6PUZ, and K6ZTQ, all between 1842 and 1950 PST. At 2340 LU-time, LU7AT heard TE sigs from XE1GE and the latter station also sent in a report of a number of LUs heard during this evening. 218

219 August 19 - From the northeast came reports of a short E opening into the Tennessee-Alabama area around 2345 EST. ZC4WR had good luck with reception of ZE2JV on TE at 1735-1855 GMT.

220 August 20 - A couple of northeastern stations noted that the E opening late on the 19th extended over to the 20th. They were able to work into Tenn., Ga., and Missouri until about 0108 EST. In the evening, LU7AT received the NBS beacons and HC1FS for some TE work accompanied by sporadic-E. ZC4WR again heard TE sigs from southern Africa during the evening.

231 August 21 - An E opening between Texas and California was noticed around 1620 PST. K9EFU heard W5SFW at 2120 EST but a good-sized E opening never got around to favoring the north on this date. 1540 to 1730 JST saw some more Japan sporadic-E, and VK4NG heard TE signals from Japan at 1000-1350 GMT. The Cyprus-Africa TE path was again open.

239 August 22 - Another excellent sporadic-E day! It started as early as 1400 EST and lasted well into the very late hours, depending upon location. All call areas were affected except the majority of W6s and W7s on the western seaboard. Cuban stations, particularly CO2ZX, came booming in to the northeast, W4s, 8s, and 9s. Stations in Florida were able to work sporadic-E distance in all directions. Japan got a touch of E, too, at 0850-0910 and 2050-2135 JST.

243 August 23 - Activity took place during the morning hours, for the most part. At 0800-0830 EST, Florida opened up to Texas. Between 0740 and 0900 MST, Colorado stations worked into Texas, Tennessee, Wisconsin, Oklahoma, and Louisiana; at this time, Nebraska was open to Arizona. Around noontime CST, the Texas area was again favored with a rather small opening to W9-land. There was aurora work, too, during the evening, 2230-2400 EST. Northeastern and central stations participated in this one. JA8BP worked VK9XK at 2035 JST via TE scatter and the much-mentioned TE path between ZC4WR and ZE2JV was again reported.

253 August 24 - The aurora of the 23rd lasted until 0340. W8s reported hearing 1s, 2s, and 3s before it finally died out. Sporadic-E activity began around midmorning EST and lasted until 1340. There was an exchange of signals between stations located east of Kansas but E work west of this point was practically nil. HB9QQ heard SM5s and LA9s at 0931-1056 GMT and there was some E work in Japan between 1555 and 2020 JST. The evening hours showed up some TE work as XE1GE worked a number of LU stations, 2055-2200 local time. The ZC4WR-ZE2JV TE path was again reported.

263 August 25 - The west coast finally got a chance at some E work again with an opening between California and Washington, Oregon, British Columbia. This was around 1920 PST. W4ZZ in Tennessee reported an opening between his location and Florida, 2155-2232 EST. On the TE side, LU7AT reported reception of XE1GE at 0025 his time; JA8BY worked VK4HD at 2112 JST.

264 August 26 - The big news on this day was the EE opening between Florida and California. The Texas area stations provided midpoint contacts during this one which occurred between 1530 and 2040 PST. It was a good one! The Great South West also had good luck with an opening to W7-land about this time. A few stations in Illinois reported an opening from their location to VE4 district about 2300 CST. CO2ZX heard signals from Texas, Louisiana, and Arizona 1920-2140 EST. OA3AAE and OA3AAF came through to W5LFM at various times between 2203 and 2315 CST for some good TE heard reports.

252 August 27 - A rather small opening between Oregon and California was noticed around 1910-1940 PST. W4FNR reported hearing a couple of Puerto Rican stations at 1155 EST.

244 August 28 - A very small opening between Texas and W0-land at 2115-2150 CST was about the only thing on this date worth mentioning.

252 August 29 - An opening between northeastern stations and Missouri, Mississippi and Oklahoma took place between 1830 and 2130 EST. Our TE data for this date included heard reports from CX1AQ. He received sigs from the two higher powered NBS stations (on E) and also heard XE1GE (on TE). All this was between 2305 and 2350 his time. In addition, XE1GE sent in a list of LUs that he worked, 1955-2120 CST. ZC4WR had good luck again with TE reception of ZE2JV.

249 August 30 - Here was another opening that included eastern, central, southern and midwestern stations. Paths in all directions in this area were open and the opening itself lasted from about 1810 EST until 2300. LU7AT again reported reception of OA3AAF, and heard TE signals from XE1GE at 0030 his time. The ZC4WR-ZE2JV report rounded out our TE data.

259 August 31 - Another excellent sporadic-E day! E paths were open in the morning and also

in the evening. From 0830 to 1220 EST, W1s, 2s, 3s, northern 4s, 8s, and 9s, worked to the south and southwest. W0s were heard to the east and south, also. An Arizona to California opening occurred between 0900 and 1100 MST. Japan got a touch of E work, 1105-1115 JST. The band opened again in the evening around 2110 EST and it looks as though this time the activity was nation-wide. All call areas participated and E paths were open in all directions. Japan got in on this one, too, with an E opening around 1900 to 2100 JST. TE work was reported by XE1GE and ZC4WR over the usual paths.

Aurora Picks Up on 144 Mc.

The two meter auroral outlook improved slightly over the opening weeks in August. Best nights for this propagation were the 17th and 23rd. Openings extended over the northeast and central states and were bounded on the south by Virginia and Kentucky. W0 aurora stations were outside the limits of these late August openings and were unable to participate in any of the A QSOs. We noticed that troposheric work was unusually good during this period and furnished some aurora-distance and longer contacts.

August 17 - Auroral work started about 1445 EST and continued until 2000. W1s, 2s, 3s, 8s, 9s, VE2s, VE3s, and W4s in Kentucky were in on this one.

August 20 - VE3BEW reported good troposheric conditions between his location and stations in Kentucky and Tennessee, between 2120 and 2300 EST.

August 21 - There was a small amount of aurora activity, notably for W2s, 8s, and 9s, between 2150-2200 EST and 2315-2320.

August 22 - W8IFX reported reception of W8KAY at 0105 EST; W1REZ was heard on aurora by W2NCF at 1805. That's all for this date.

August 23 - This was probably the best night of the August period. The opening started around 2230 EST and aurora signals were heard as late as 0230 on the morning of the 24th. The same call areas were affected in this opening as were listed for the August 17th one, except that stations in Kentucky were replaced by W4s in Virginia.

August 24 - W2ORI heard aurora signals from a couple of stations in the W8 area, 2228-2304 EST. At this same time, W8FEU reported reception of W2GRI.

August 25 - Auroral contacts were possible between 2320 and 0155 EST. W1s, 2s, 3s, 8s, 9s, and W4s in Virginia were able to make use of this opening.

August 30 - Notable on this night was troposheric work between W2s and W4s in Virginia, North Carolina, and South Carolina. These tropo contacts were made between 2150 and 2310 EST.

September 1-15 Provides Steady TE Diet on 50 Mc.

Sporadic-E, summer soldier that it is, provided 50-Mc. men with only a few small openings during the September 1-15 period. Frosty old aurora did rather better, especially on the 4th when many southern stations worked the buzz. Of even more interest to us, however, was the solid way in which the several TE circuits behaved. Thanks to new and newly active observers in these critical areas we were able to compile quite a complete record of transequatorial goings on.

262 September 1 - Between 0730 and 1035 EST W1s and 2s had off-and-on Es shots into Fla.; the same went for W3s and Fla., Ala. and Tenn. 2207-2355 EST it was W1, 2, 3 and Virginia to Kans., Neb., Minn. and Wyo. About this same time (1930-2025 PST) Ore. and Wash. stations worked Col. and Wyo. The N.B.S. beacons in Chile and Peru were heard by both PZ1AE (1900-2000 EST) and XE1GE (2020-2120 CST). ZC4WR worked ZE1JN and ZE2JV crossband 6/10 between 1715 and 1900 GMT. VK4NG and VK9XK talked to JAs via TE from 1950 till 2300 EAST.

282 September 2 - The only report we saw from the U.S. was from W0ZZY (Minn.) who worked W0GDG in Col. at 2300 CST. JA8BY reported an Es opening to JA1 and 2 between 2012 and 2035 JST. JAs were worked on TE by VK4NG (1932-2320) and VK9XK (2000-2231). ZC4WR continued to contact the ZEs and also heard ZS3G between 1705 and 1925 GMT. LU stations were worked by PZ1AE and XE1GE 2015-2105. CX1AQ heard the CE8AE and OA3AAE beacons 2210-2300 his time.

271 September 3 - This date brought aurora to the northeastern U.S. and the cessation of South American TE. Between 1630 and 2233 EST W1s, 2s, 3s and 8s plus VE2s worked each other on "A". K2ITP hooked up with brother K2ITQ who is on the air while at Brown University. Although there were only nil reports from Mexico and Central and South America, TE was worked to Japan by both VK4NG and VK9XK between 1935 and 2235 EAST.

257 September 4 - Here was a nice southerly auroral session, all right. Signals were noted by several W1 and 2 stations during their noontime band checks, and the aurora seemed to be there right through the afternoon and evening till about 2330 EST. It did show westward movement, however, for the northeastern observers were out of the picture after about 2100. Georgia was open to Tenn., W8 and W0. W4GJO in Fla. heard W4IKK by "A" at 2307 EST. At the western extreme, W7CJN in Butte, Mont. worked W7ACD and heard W7CIO and W7DMN around 2030 MST. For completeness sake, we do have one Es note -- W0TII in Denver heard K5PTG at 2424 MST. Still nothing but negatives from South America, but VK4NG and VK9XK had their JA TE from 2025 till 2120.

234 September 5 - Back to Es; W4GJO worked it all the way from 2015 till 0020 EST. Grid found the opening to be NNW at the start (Tenn. and Ohio). It then swung around through

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Ga. and Miss. to Texas. Around 2000 CST W0IBL heard Cubans CO2XZ and ZX. The N.B.S. beacons (but no South American hams) were heard in the U.S. by at least two observers. W4FNR noted them 1258-1346 EST and W4IKK heard OA3AAE and AAF only from 2120 till 2306. The latter signals were strong with no flutter. While we're down south, XE1GE worked LU9MA at 0915 and heard the beacons 1145-1215 CST. CX1AQ heard PY6FI at 2347. ZC4WR worked ZE2JV crossband 1820-1950 GMT, and KH6CCZ picked up ZK1BS at Rarotonga once again about 2305 EST. Oh yes, JA8BY noted Es to JA1 2130-2145 JST.

216 September 6 - 0830-0930 EST brought a little more Es with N.J., Pa. and Va. stations contacting Fla. That was it for the U.S. except for W4FNR's TE reception of LU7DDG between 1930 and 2128. XE1GE worked LUs 2045-2145 CST, and PZ1AE heard the beacons 1930-2135 EST. ZE2JV picked up G4LX's 52.5-Mc. signal 1737-1745 GMT. Between Australia and Japan there was both F2 and TE. VK4NG listed F2 at 1645-1650 and 1905-1910; TE at 2035-2342 EAST. VK6BE had it F2 1100-1145 and 1450-1605 and TE 2000 (to JA9 and also DU1LW) WAST. That's two hours behind EAST.

210 September 7 - A little scattered aurora was all there was for U.S. observers (except for very good afternoon-evening tropo in the southeast). 1716-1744 EST W1LGE and K2ITP made a few W1 and 2 and VE1 contacts. W3PMG heard W2, 9 and VE2 1800-1850. W1LGE spotted a W3 at 2043. OA4C heard beacon CE8AE at 2215-2240 EST, and CX1AQ heard PY7HS at 2207 his time. VK4NG worked the JAs 1850-1900 on F2 and 2020-0040 via TE. G4LX received ZE2JV 1655-1730 GMT. ZE7JX (ex VQ2PL) heard CT1CO 1600-1715 GMT.

211 September 8 - The only positive U.S. reports were logs by W1CLH and W3PMG. They both show aurora 2030-2130 EST. The former heard Mass., N.Y. and Pa.; the latter W2 and 8 and VE2. Meanwhile, XE1GE worked LUs from 2035 till 2150 CST. G4LX heard ZE1JZ and ZE2JV 1645-1648 GMT. ZE7JX heard VQ4EV and VQ5GR on Es 1715-1731 GMT. There was more VK-JA F2 and TE; VK4NG's times were 1637-1650 for the former and 1900-0030 for the fluttery stuff.

236 September 9 - Only nil reports were received from the States, but XE1GE heard the N.B.S. stations at 2050 CST and LU5DHK at 2115. CX1AQ heard PY7HS at 2230 local time. G4LX heard ZE2JV 1648-1745 and ZC4WR worked ZE2JV 1817-1935, both GMT. VK4NG worked his JA F2 at 1235-1300; TE was at 1950-2145 EAST. VK4IK was heard by VK3ALZ 2100-2115. KH6CCZ picked up ZK1BS once again at 2250 EST.

246 September 10 - Still nothing positive from the U.S. Down south, CX1AQ heard the beacons and XE1GE from 2255 till 2330 local time. The latter worked LUs twice that day -- 1110-1150 and 1940-2100 CST. OA4C heard the LUs 2045-2210 EST. VK4NG's F2 and TE times were 1445-1936 and 1955-2300 EAST. VK9XK was also in on the TE session. G4LX continued his 1700-1745 reception of ZE2JV, and ZC4WR worked ZEs 1750-1930 GMT.

251 September 11 - Just one Es note -- K2LVA heard K4MYJ at 2007 EST. The big news was the number of southern U.S. stations who got in on TE to South America. This all happened between 2100 and 2230 EST. Some of the stations hooking up with LUs and CEs were W4FNR, W4MS, W5EXZ, W5GEH and W5KRH. The latter also worked TG9RC. XE1GE's TE times were 1930-2200 CST. OA4C worked LUs and W4 CQP and W4KKD between 2035 and 2145 EST. Elsewhere, ZE2JV was heard by G4LX (1700-1745) and worked by ZC4WR (1732-1850). Times GMT. VK4NG reported a double dose of JA and KH6 -- 1120-1255 on F2 and 1850-2105 on TE. KH6CCZ worked VK9XK twice on this date in his time system -- at 0040 and again at 2345 HST.

271 September 12 - The only positive U.S. report is from W5LFM; Cal worked LU3EX on TE at 2107 CST. CX1AQ heard a great deal between 2237 and 2337 his time. He reports that steady signals were received from XE, PY6, OA3AAE and OA3AAF, while the YV and CE8AE sigs had extreme flutter. This was also noted on other nights during the period. OA4C, XE1GE and YV5AC all reported working LUs during the midevening. VK4 and 9 had their TE, also. Both JA and KH6 were worked between 1925 and 2150 EAST. G4LX picked up ZE2JV again 1700-1745 GMT. ZC4WR worked ZE2JV and ZE1JN. Of extra interest: HB9BZ worked ZS3G via TE at 1815 GMT.

286 September 13 - W4GJO heard XEs between 1900 and 2007 EST. W4MS heard TG9JW 1824-1832 CST. YV5AC and OA4C both report working LUs 2025-2130 EST. VK4NG worked JAs on TE at 2030-2325 EAST; VK6BE did it at 1932-2250 WAST. VK9XK found TE to KH6CCZ at 1910-1920 and 2000-2200. G4LX continued to hear ZE2JV and the latter plus ZE1JN were worked again by ZC4WR. HB9BZ received TE signals from ZS3G at 1815 GMT.

291 September 14 - W4UMF heard W5YKZ in New Mexico at 1215-1230 EST. OA4C heard LUs 2110-2150 EST. CX1AQ heard the beacons and XE1PY 2313-2320 his time. G4LX heard ZE2JV twice -- 1107-1130 and 1300-1330 GMT. HB9BZ heard TE from ZS3G at 1820 and 1905. ZC4WR worked ZE1 and 2 plus ZE6s UR and JW via TE 1706-2020. VK4NG and VK9XK had TE to Japan 1925-2355 EAST.

272 September 15 - Between 1900 and 2004 EST a few W1, 2 and 3 stations worked a few stations in Ala., Ga. and Miss. on sporadic-E. K6RNQ thought he heard LU9MA weakly at 1100 PST. PZ1AE, XE1GE and YV5AC all had long lists of LY stations worked between 1830 and 2100 EST. OA4C heard LU6DOH, and CX1AQ picked up the beacons, LU9MA and PY6HI. HB9BZ heard ZS3G again at 1825 via TE. VK4NG and VK9XK continued their JA TE between 1900 and 2240 EAST.

September 4th Highlights Period for Two-Meter Men

The first half of September gives us five days to talk about and furnished an especially fine aurora on the 4th -- a real southerly session for a change. Sept. 3rd was almost as good if you lived in the northeast, the others were minor affairs.

September 3 - This auroral opening began around 1730 or so EST, depending on when you got

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SCANNING THE ISSUE:

F2 SKIP BEGINS AS TE SCATTER PEAK FADES

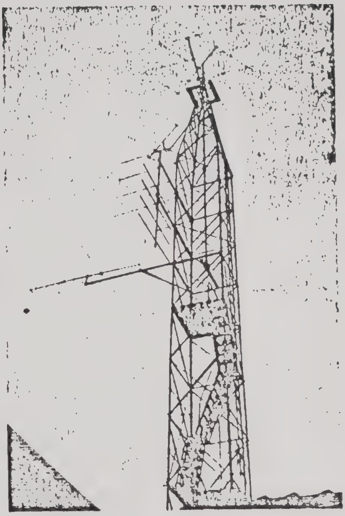
NEW WWI SIGNAL AIMED AT N.Y.C.-L.I. AREA

MORE IONOSPHERIC CYCLE INFO FROM W6KUH

IONOSPHERIC CYCLES, Cont.

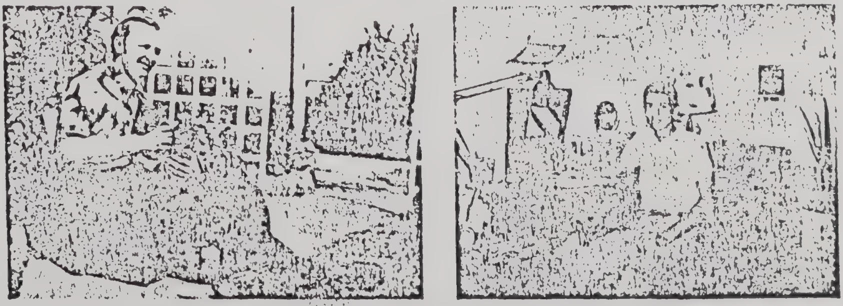
Did you have a hard time working your way through the material on pages 2 and 3 of last month's bulletin? Did you wonder what the whole thing was all about? If so, we don't blame you a bit! Somehow or other, our lead article went to press sans its title, its credit line and its introductory paragraphs. About all your editor can say to excuse himself is that the October News was put together the week before his marriage to the former Miss Frederica Crawley of Elmwood, Conn. Perhaps he was a little distraught at the time!

At any rate, sincere apologies to author Gordon Simkin, W6KUH. Gordon is International DX Editor of the American Ionospheric Propagation Association (AIPA). This is a club of people from all walks of life who enjoy the hobby of TV DXing. If you have an interest in this sort of thing, W6KUH will welcome any questions addressed to him at P.O. Box 201, Loma Linda, California. And now if you'll turn over this page, here's the rest of his article.



ABOVE: 90-foot tower and beams of TV DXer George Palmer (now SWL-F7) of Williamstown, Vic., Australia. VK3AHL interested him in PRP.

BELOW LEFT: Lance Harding, VK3AHL, of West Brunswick, Victoria, Aust. taking a little time off from the ham shack. Lance is active on 50, 144 and 288 Mc. (VK bands are 288-296 and 576-585). Both he and Ian Berwick, VK3ALZ, have been of great help in finding more VK observers for PRP. BELOW RIGHT: Riley Sundstrom, SWL-24, of Stockton, New Jersey. Riley is the son of K2TPC and supplies us with regular 50-Mc. reports. The gear shown is for BCB and SW.



[Nov 58]

CYCLIC VARIATIONS OF THE IONOSPHERE

Most amateurs are quite familiar by now with the fact that the F2 layer of the ionosphere shows considerable variation -- in cycles. The cycle most often spoken of in connection with the IGY is the 11-year one, the peak of which has just passed. It is at least in part because of this peak that the IGY was planned for this time. The most obvious cycle is probably the daily one. This usually brings best F2 conditions for the v.h.f. man when the midpoint of the path involved is near noon. An only slightly less obvious variation is the yearly cycle in which our winter brings best east-west propagation.

One more cycle is a less noticeable one having a period of about 27 days. It is thought to be caused by sunspots passing across the face of the sun as the latter rotates on its axis. This rotation takes about 27 days at the solar equator and somewhat longer toward the poles, proof of our sun's gaseous nature. If, as is presumed, this cycle is caused by sunspots which remain for more than one revolution of the sun, the actual interval between similar propagation conditions would be dependent on the latitude of the sunspot group and would be 27 days or longer. But if this is so, then any cyclic variation caused by one sunspot group would last only as long as the particular group lasted. Personal observations, however, make it appear that the cycle does not die out but rather forms a basis for prediction of future peak intervals. The remainder of this article is based on these observations.

Some of the observed DX is shown in Figure 1, a 28-day cycle chart covering the period between April 7, 1957 and July 26, 1958. Since there are 28 days on each line, any 28-day repetition will show up vertically on the chart. 27-day intervals may be examined by reading diagonally downward to the left. From April 7 (first day of the chart) to September 30, three things are indicated: K - reception of KUA217, Honolulu, T.H., on 35.58 Mc. at Loma Linda, California (50 miles east of Los Angeles); o - KUA217 not heard and x - no observations made. Let us examine these data for cyclic variations. We shall, however, drop the September information from the analysis because during that month the path MUF was above 36 Mc. so much of the time that reception of KUA217 was no longer an indication of peak conditions........

Now read over the material on pages 2 and 3 of the last issue and see if it isn't a little more meaningful!

"LONG WAY AROUND" JAPAN TO MADEIRA CONTACTS MADE

Perhaps the most outstanding bit of propagation of the past month (if not the past year) linked Japan and the Madeira Islands on 50 Mc. the long way around the globe, a distance of some 17,400 miles. Whether this is a new DX record or not depends on your interpretation of distance: is it the physical separation between two points or the actual distance traveled by the signal? Our first reaction was to say "new record" without hesitation, but there are those who can foresee arguments including how far one's waves travel through the ionosphere if the latter reasoning is used.

Be all this as it may, PRP observer CT3AE has managed to work two and perhaps three JA stations. The reports we have are somewhat conflicting, but here they are, subject to later revision: CT3AE told Ed Tilton by letter that he worked JA3CE and KA2AS on the evening of October 8th, his time. JA3GR's PRP log lists a contact with CT3AE 0841-0851 JST, October 9th; this would be 2341-2351 on the 8th in CT3. LU3EX says he heard CT3AE working JA3CE at 2101 LU-time on the 10th. This would be 0001 on the 11th in CT3 and 0901 on the 11th in JA. A little later, at 2230 LU-time, LU3EX heard JA6JY.

What caused these contacts? Taking into account the local times at each end of the path, the antenna bearings, and the fact that both CT3 and JA were heard in Argentina, it seems plain that it was a "long way around" affair. The Madeira-to-Buenos Aires part of the circuit was probably conventional TE propagation -- LUs were having plenty of that on this occasion. The LU-area to JA link is perhaps the same sort of thing that was responsible for previous DX records. We have suggested in the past that it might be TE northwest from Argentina across the geomagnetic equator and then conventional F2 skip into Japan. Note that LU is not exactly on the long great circle path between CT3 and JA, so there may also have been a little backscattering to modify the direction of propagation.

Argentina and Japan are located so as to especially favor work between these countries; they are antipodes, that is, points which lie diametrically opposite each other on the globe. Perhaps the only other antipodal points which are both on land and have radio activity are England and the Australia-New Zealand region. Six-meter men are familiar with the long-distance hauls between JA and LU (the only such work ever done on the band), and TV DXers in Australia have had rather good luck in picking up the lower BBC TV transmissions. Some or all of this may be the result of a focussing effect on radio waves between antipodes. There are, of course, an infinite number of great circle paths between two such points, and the likelyhood of one or more of them supporting communication is much greater than for two other random locations. Even so, there seem to be preferred paths between antipodes -- paths which cross the twilight zone where the F-layer of the ionosphere is tilted because of its after dark increase in altitude. This tilt has the effect of propagating higher frequencies than the "flat" ionosphere could reflect. The assumed LU-JA path does pass through the twilight zone.

A PRP NEWS SPECIAL SUPPLEMENT -- NOVEMBER, 1958

Help of PRPers Sought for Rocket Propagation Test

The following is from Memorandums TP-37 and-38 issued by the USNC-IGY on October 24th, 1958: "Announcement is made of prospective launchings of two Spaerobee rockets to be fired to an altitude of 300 miles at Fort Churchill, Manitoba, Canada (Long. 97 17 W, Lat. 58 43 N) during November 1958. These rockets, being launched by the U.S. Naval Research Laboratory, will probably be the last ones in the U.S. IGY rocket program.

"The Working Group on Satellite Ionospheric Measurements is interested in alerting the world-wide network of IGY ionosphere stations and experimenters to these prospective launchings since it should be possible to provide data on the usefulness of frequencies near 40 Mc. for world-wide telemetering from satellites. There is also an interest in obtaining data on the use of direction finders on the signals. The following information in connection with these rocket launchings is therefore provided: Rocket IGY-NN10.01 is scheduled for launch at 1800 hours GMT, November 25, 1958; IGY-NN10.02, November 27, 1958 (exact time not yet established). Transmission frequencies near 7.752 Mc. and near 46.512 Mc. unmodulated and harmonically related (exact frequencies will depend on interference conditions).

"The information desired is the time the higher-frequency signal was first heard in GMT, the time at which it was last heard, approximate signal level, any observed fading or modulation, unusual effects of any character, type and orientation of receiving antenna, and the latitude and longitude of observing station. The lower-frequency signal is of some interest also, but the primary interest is in the higher-frequency signal. Please send these data to: Code 7158, U.S. Naval Research Laboratory, Washington 25, D. C., U.S.A., as soon as practicable after the firing.

"Information on scheduling involving launching delays of only a few hours may be had by "eavesdropping" on radio station NKF-52 at Fort Churchill on 14.385 Mc., upper side-band transmission during good radio propagation conditions, otherwise c.w. This station will keep NKF-51 in Washington, D. C. informed of developments during the three hours before each firing."

This is an important job, and it is hoped that every 50-Mc. PRP observer will tune down to 46.512 and listen for the signal. Check W1AW for late details. Any reports sent to PRP Headquarters (we will add your latitude and longitude coordinates if you wish, but please keep rocket reports separate from regular logs) will be forwarded to NRL. If you know your coordinates, however, your report will be more useful if sent direct and as soon as possible.

DX NOTES FOR THE SECOND HALF OF OCTOBER

That page one headline about F2 and TE is rather hard to justify from our Propagation Calendar this month, but the following facts about conditions during October 16-27 may help. XE1GE, when he mailed his log for the first half of the month, felt that the TE season was just about over. On F2, however, October 16th saw the first transcontinental DX (four days ahead of 1957) and the first crossband contacts with European 10-meter stations. KL7AUV, Anchorage, Alaska, worked his first JAs Oct. 17, around noon Alaskan time. Signals were better the next day, and Jack and his wife, Margie, KL7BLL, worked 10 different Japanese stations in a two-hour opening.

CT1CO, Lisbon, Portugal, was heard by W1HDQ and W1SUZ for the first time this fall on Oct. 18, around 0855 EST. Manuel's automatically keyed signal came through earlier each day up to Oct. 20, when it broke through at W1HDQ at 0700 EST. It was logged every day except Oct. 22, 23 and 24 (disturbed days) up to Oct. 27. CT1CO is now on 50.008 instead of the tough spot, 50.1 Mc., he used last year. So far he has been heard only on automatic, sending "CQ DE CT1CO" with long dashes interspersed. He comes through when no other DX is heard in the European direction. EI2W, near Dublin, Ireland, worked his first 50

(over)

298

Ws of the 1958 fall season Oct. 19. 240 24

VS6CJ, Hong Kong, heard and positively identified the BBC television sound on 48.25 Mc. from 1250 till 1455 GMT on Oct. 20, a rare trans-Asia hop. KH6CTC, Kailua, TH (Island of Hawaii) heard K6GJD, K6UGF and K6VLM on Oct. 23. On Oct. 25 W7JRG and W7RT contacted several Argentine stations between 0900 and 1150 PST. Those worked were LU2FAO, LU2FCD, LU3DCA, LU5ACA, LU9AS and LU9AT. In addition, PY3BW was heard by W7JRG and worked by W7RT. This same morning W1HDQ worked W0DNW in Neb. via backscatter from the south. On Oct. 27 W1LGE heard W9 on ES working ZE2JE. 193

193 Those are some of the 1958 "firsts" as we have them as press time. East-west paths above the equator may be somewhat below last year in number and duration of openings, but circuits crossing the equator should be better. Watch for transequatorial openings from the northern latitudes, particularly on days following auroral disturbances.

What's Going To Happen To PRP?

The above question has appeared on many a report form of late, most observers also asking: "Do we have to stop right when so much interesting propagation is going on?" Although a detailed and guaranteed answer to this is not at the moment possible, we can give out with a good idea of what is likely to happen and why.

First of all, IGY scientists emerged from their August meeting in Moscow with a recommendation to continue most of the IGY experiments for another year, to be called the "International Geophysical Cooperation -- 1959." Naturally this expression of intent has to be modified somewhat by the practical matter of paying for the work to be done taken along with the need for funds to begin the detailed study of data already gathered during the IGY. The result will be the selection of certain studies which would be either illogical to stop (such as the Antarctic series) or especially benefical to continue.

We're glad to report that a portion of PRP seems likely to fall into the latter group. We say portion because there will have to be some changes made. For one thing, it is likely that the number of observers will have to be cut to about one hundred. Those invited to continue with us will be chosen on the basis of consistent reporting, usefulness of reports and geographical distribution around the world. Obviously, most of the stations in other countries will be sought while many United States reporters can no longer be included. They can, however, form a back-up squad to fill in when a regular observer cannot supply a report.

There will be a change in the type of reports to be collected, also. The emphasis will definitely be on transequatorial scatter propagation and openings of other types related to it. We will continue to want detailed TE logs (including any E and/or BS that goes along with the TE) and specific reports of north-south F2 work and long-haul east-west openings which cross the equator. All that will be required for other propagation modes (regular E, A, B, I and east-west F) will be a general description of what happened.

Another phase of the post-IGY PRP will be the start of a detailed analysis of the 1957-58 reports. Just where the work will be done is not fixed at this writing, but there will continue to be a monthly newsletter for participants and there will be a new award system, our CRA certificate and stickers having been based upon a two-year period. Check next month's News for more information.

With 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

THE ARRL PRP IGY NEWS

*MONTHLY BULLETIN OF THE ARRL-IGY
PROPAGATION RESEARCH PROJECT*

NUMBER 24 DECEMBER, 1958

SCANNING THE ISSUE:

AUSTRALIAN AMATEURS RETAIN 50 MC. FOR 1959

W8JUV DESCRIBES AURORAL VARIATIONS

IGY ENDS, PRP TO CONTINUE ON REDUCED SCALE

144 Mc
50 Mc
50 Mc
SM6-2917

ABOVE: An exceptional VHF SWL -- Olof Karlsson from Malsryd, Sweden -- and his listening gear. Using nearly all homebuilt equipment VSWL-F4 has heard DL, G, GM, HB, LA, ON, OZ, PA, SM, and SP on 144 Mc. On 50 he has picked up CT, HB, LA, SM, VE and over 500 W and K stations. That PRP CRA on the wall shows he's been a good reporter, too.

LEFT: C. A. Waterhouse, W4INM, of Chattanooga, Tenn. using the noise generator on his 50 Mc. converter. Not in the picture are his 75-watt rig and PRP Certificate. "CA" gave W1VLH a FB tour of his color photo-finishing plant during my July visit.

PRP -- 1959

It's very hard to believe that two years have passed since the writer stayed up all night to print, collate, staple, fold and stuff issue number one of the PRP News. What this means, of course, is that you are now reading issue number 24 -- the "last" one as we thought of things back in December 1957. Is this indeed the last News? The answer is yes and no. Detail-settling negotiations are still going on, but we can now say for sure that there will continue to be an ARRL Propagation Research Project. However, things won't be quite the same.

For one thing, we shall not be able to maintain our observing group at its present size. It has been necessary to pick 100 stations from the whole world to be PRP Area Representatives during 1959. These amateurs were selected for the usefulness and consistency of their past reporting and to secure as even global coverage as possible. They will all be notified of their appointments by mail before the end of December.

Many deserving PRPers had to be omitted from the "100". Often there were two or three or half a dozen stations in the same area whom we would have liked to have become PRP reps. We are sincerely sorry that we cannot continue to accept logs from many of you who so generously want to keep

sending them in. Besides our warm thanks (to be sent each of you in a more personal form shortly) we can give you this invitation: If you do not receive a request to continue reporting by the end of the year, but are interested in doing so, please send us your QSL card or postcard expressing this desire. These will be kept on file, and their senders used to fill ranks in case any regular reporters cannot carry on.

There will be still other changes in 1959. Log sheets may be sent in at the end of each month instead of every half month. This should help reduce the postage problem for our loyal overseas friends. Also, the specific contact and heard reports now filed will only be required for propagation paths which cross the equator and for other openings such as E or BS which accompany transequatorial work. For all other 50-Mc. contacts, a brief description including the areas covered and the begin and end times will be sufficient. No post-IGY 144- and 220 Mc. reports will be solicited. For a while at least, the same report forms will be used and they are to be mailed to the same old address. Before too long, we hope to have available log forms printed on thinner paper (that postage problem, again). PRP reps will continue to receive a monthly newsletter (airmail for overseas, we hope), and a new award system is in the works, too.

This specialization in 50 Mc. and in various forms of transequatorial propagation may puzzle those of you who have reported mainly other bands or modes. It is felt, however, that sufficient data have been collected about the more common types of propagation to yield worthwhile results when put with the large amounts of professionally-gathered information available for the IGY period. With transequatorial modes the story is a little different. Not only is the pile of such reports rather smaller (this goes for IGY period and expected future data from IGY scientific stations, also) but some feel that across-the-equator-propagation may be even better next year then it has been this last one. Amateur efforts should, then, be concentrated here where they can help most.

Lastly, a new phase of PRP will begin during the coming year. This is the detailed analysis of the reports you have supplied. The writer hopes to have a hand in this important work at Stanford University, and he promises to see to it that PRP News and QST readers hear results at the earliest moment possible.

MORE ABOUT CYCLIC VARIATIONS

The most interesting comment received about W6KUH's ionospheric cycle articles (PRP News No. 22 and 23) was the following paper by W8JUV who draws upon his 144-Mc. results to suggest that 27/8-day cycles do not persist beyond one sun rotation as described by W6KUH. Since Stu's conclusions are more commonly accepted today than Gordon's, we thought it only right to give him the floor.

A STUDY OF AURORAL VARIATIONS by Stuart E. Bonney, W8JUV

The information presented here is the result of observations made of 144-Mc. auroral propagation during the period January 1, 1957 through May 31, 1957, from my location in western Michigan. Some of the conclusions, inferrences and opinions to be expressed are repetitious of previously published information. Many of the things observed are common knowledge to the more serious v.h.f. operators. However, it was desired to do an objective analysis based solely upon observations made during this period in the hope that something useful might come to light.

Auroral propagation was observed on a total of 31 days during the period for an average of about one day in five. A cycle of 27 days was strongly indicated with a total of six definite recurrences. In no case was an occurence followed by more than two recurrences. Two cycles were noted in which there were two recurrences. There were two cycles in which a definite single recurrence appeared. Five other appearences of auroral propagation came 27 days after a previous occurence but could not be definitely classified as recurrences. They were rather weak and may have been caused by comparatively small, isolated disturbances on the sun. The remaining occurrences bore no observable relationship to each other. It is assumed that they too were the result of isolated disturbances which dissipated in less than one complete revolution of the sun.

Referring to the two cycles in which there were two recurrences, it is interesting to note that the initial occurrences were separated by 19 days. Thus there were two cycles running concurrently, apparently caused by two widely separated disburbances. There were noticeable dissimilarities between these two cycles. The first began February 4 with an occurrence of fairly strong intensity and radiation. The first recurrence covered the period March 1, 2 and 3 with the peak on March 3 being extremely intense and persistant and the best day of the entire five-month observation period. The second recurrence, covering the period March 26, 27, 28 and 29, had increased in duration but decreased in intensity to a point slightly below that of the original occurrence on February 4. In view of the high intensity of this cycle it is significiant that during the period in which there should have been a third recurrence none was observed. The second of the two cycles differed from the first mainly in that it was not as well defined and was characterized by much weaker intensities.

Whenever atmospheric conditions permitted,a visual observation was made of auroras which occurred during the five month period. It was noted that numerous fairly prominent auroras yielded poor auroral propagation results. Conversely, there were times when unimpressive displays yielded excellent radio results. There appears to be some possibility that the energy which causes aurors may vary in nature, that more than one form is involved, or that auroral propagation is due to ionization of a different area than that in which visible auroras take place.

[Dec 58]

Based upon the radio observations of this short term period, the following conclusions have been drawn: The 27-day cycle is caused by disturbances or sunspots which last for more than one complete rotation of the sun. The more persistant sunspots are concentrated near the sun's equator. A large percentage of sunspots last for less than one complete revolution and rarely for more than two.

With regard to the auroral propagation of radio signals: The 27-day cycle is useful only to the extent that the possibility of a recurrence may be predicted. The chances for an actual recurrence appear to be about one in three. Once a cycle has run its course it is no longer useful for predictive purposes. Subsequent occurrences that may fall in step with a previous cycle do so by chance and are the result of a new disturbance. During periods of peak aurora activity many cycles may exist concurrently and many isolated auroras may occur.

In order to take full advantage of the possibilities for auroral prediction, a daily monitoring program for detection of the presence of aurora is a necessity.

1958

PROPAGATION CALENDAR

Six Meters - October 16 through 31

Many different kinds of propagation were represented during this period. Most interesting thing about these two weeks was the occurrence of F2, BS and E at the same time on at least two days. Needless to say, this made for quite a bit of 6-meter activity. CT1CO, EI2W, and several ZEs were widely heard in the states. There were even a couple of fairly good aurora openings and, of course, TE work continued as usual. Here are the details:

255 October 16 - Not much going on state-side on this date. However, W4GJO did hear the N.B.S. beacons on F2 between 0815 and 0827 EST. JA7EV heard VK4HD on F2, and VK6BE confirmed this Australia-to-Japan noontime activity.

288 October 17 - W4FNR worked W7RDY at 1144 EST for some indications of F2. There was not, however, a good east-west opening. The South American beacons came through to W4RMU, W4GJO, and W4IKK. The first two stations heard them on plain F2; W4IKK was getting some of that TE flutter. Big news for this day was the sporadic-E. Looks as though the whole U.S. was affected by this late evening opening. TE work went on between Japan and VK4-land, and between KH6CCZ and VK9XK.

286 October 18 - CT1CO was widely heard via F2 by many east coast stations around 0900 EST. We received a couple of examples of east to west coast F2 but there was no indication of a good full-scale opening. California was open to the Oregon-Washington area around 1400 PST, courtesy of sporadic-E, and there was Es work between the provinces of Queensland and Victoria, Australia around 2000 EAST. KH6CCZ had good luck with a TE path to VK9 and VK4; VK4NG heard TE sigs from Japan.

298 Octobcr 19 - F2 was excellent today! Both EI2W and CT1CO were heard along the east coast. East to west coast work was much in evidence and there was plenty of backscatter served up on the side. JA8BY worked KL7AUV at 0830 JST as the opening moved west. Australia-Japan TE work was reported by observers in both countries.

280 October 20 - The F2 layer allowed SWL21 in New Jersey to hear LA9T at 1016 EST. CT1CO was again widely heard. There were a few reports of a rather small F2 opening within the U.S., mainly affecting Oregon, California and W1s, 2s, and VE1s. G4LX heard a number of W1s and W2s at noontime GMT and VK6BE received signals from Japan on F2. TE work picked up quite a bit and there was a path open not only between Australia and Japan, but also between Argentina and Surinam, Argentina and Mexico.

279 October 21 - Again, CT1CO found good reception among the W1s, and again there were a very few reports received of a east-west U.S. opening. G4LX heard W1GKE at 1305 GMT. TE took the spotlight, though. Australia to Japan path was open, of course. Stations in Argentina and Uruguay heard good TE sigs from Surinam, Venezuela, Cuba, Colombia, and Mexico. Most fellows involved in this TE were able to work sporadic-E at the same time.

272 October 22 - F2 work was represented mainly by the reception of the N.B.S. beacons by W4RMU and W5MJD. Sporadic-E had a better showing with an opening between Colorado and Illinois, Indiana, Ohio around 2200 CST; VK3s, 4s, and 5s, exchanged E sigs around 1900 EAST. During the evening hours, U.S. northeastern central stations reported a little amount of aurora work. G4LX SM6BTT and SWLF4 (Olof Karlsson) also noticed traces of A on signals received at their stations. On the TE side; CX9AJ sent in a log showing TE paths between his location and Surinam, Mexico, Venezuela, Canal Zone.

242 October 23 - In the evening again, there was a rather small A opening; traces of A were also heard by G4LX and SM6BTT. F2 and BS were really outstanding and the emphasis seemed to be on the north-south kind. XE1GE was heard throughout the northeast and stations on each end of this path and in between were working each other on BS. Sometimes it was difficult to weed out the BS from the E, because there was some of the latter going on, too. It looks as though W3s, 8s, 9s, were working Florida on straight E and working each other on BS. (We haven't actually evaluated these reports, just looked them over, so this judgment might be subject to change!) There was evidence of some east coast-west coast work but, as we said, the emphasis was on the north-south kind - and the backscatter was everywhere!

223 October 24 - W4RMU caught F2 sigs from CE8AE at 1040 EST; K9ARU heard LU6DOH at 1100 CST. A sporadic-E opening to the Missouri area was reported by W3AGT. It took place between 0920 and 1040 EST. Two aurora openings held our attention on this date. W1SUZ heard a couple of W2s on

A as early as 0532 EST; W1LGE heard traces of A at 0745. Another opening occurred in the evening but activity was mostly confined to northeastern stations. G4LX and SWLF4 also experienced some buzz reception at their locations.

193 October 25 - Big news was the F2, BS and E, all practically at the same time. There was a good east-west coast opening; the South American beacons were widely received; LUs and PYs came booming in to Michigan, Wisconsin, Oregon, Washington, California; PZ1AE heard LUs; VK6BE heard Japan; KH6CCZ heard Japan, and W5SFW heard Hawaii; W6PUZ worked ZL1BJ, and K6OKK heard OQ5EH in the Belgian Congo at 0948 PST. Backscatter was excellent while all this was going on and, to top it all off, a sporadic-E opening affected the eastern half of the nation at the same time! TE work continued between PZ1AE and southern locations in the evening. LU3EX worked some JA stations between 2229 and 2354 LU-time.

196 October 26 - Again, a good day for F2. CT1CO and the S.A. beacons had good reception in the U.S. Those who aimed their beams south caught a lot of backscatter, too. F2 work between Japan and Australia was also reported.

193 October 27 - A few reports were received confirming some east to west coast F2 work. CT1CO was heard on the east coast. Several ZEs found eager ears in the central and south central states. N.B.S. beacons continued to rate reception reports, particularly from W4s. Australia-to-Japan F2 continued. During late afternoon and early evening, there was a very slight amount of auroral activity in the northeast. HB9BZ supplied us with TE reports of his reception of ZSs. JA7EV heard several VK4s on TE, too.

211 October 28 - Not too much F2 within the U.S. but K6RNQ heard ZL1DE, 1410 PST. Only a couple of stations heard the N.B.S. beacons on this date. ZC4WR reported an F2 path to Southern Rhodesia; VK6s and 4s heard Japan. Between 2000 and 2350 EST the eastern half of the nation had a fairly good sporadic-E opening. In Australia, there was an E path between Victoria and Queensland, 1815-2100 EAST. G4LX heard slight traces of aurora during the evening GMT. JA8BY heard VK4HD on TE.

232 October 29 - F2 allowed a rather small east-west opening on this date. CT1CO and ZS3G were heard by a couple of stations in eastern locations. Japan-Australia, Cyprus-South Africa F2 paths were open. Between 2305 and 2330 EST, there was an E opening from Texas to Tennessee and Georgia. Japanese stations enjoyed sporadic-E between 1940 and 2130 JST. TE activity between Australia and Japan was reported.

230 October 30 - K6RNQ worked ZL1BJ on F2, 1340 PST. VK4s and 6s heard Japan. Around 0700 EST there was a sporadic-E opening between the northeast and Florida. Between 0735 and 1130 PST, California, Texas, New Mexico enjoyed some E activity. Again in the evening around 2300 EST, a Georgia-Texas E path opened up. Japan-Australia, Cyprus-Southern Rhodesia TE paths were reported.

224 October 31 - Here was another good day for F2. The east-west coast path was open. CT1CO was widely heard. G4LX, G2BVN and SWLF4 each heard a number of eastern U.S. stations. PZ1AE and LU3EX rounded off the period by reporting evening TE work in South America.

144 Mc. - October 16 through 31

Conditions during the second half of October weren't really anything to crow about but they did show a slight improvement over the first period of the month. Openings were reported for the 22nd, 23rd, and 24th, and a few scattered reports came in for other days, too. Tropospheric work didn't give any helping hand during this period and there were many days during the period when nary a thing could be reported.

October 22 - Here was the first aurora work. The opening started about 1730 EST and ended around 1930. Activity took place between W1s, 2s, 3s, 8s, 9s, VE2s, and VE3s. No W0s were heard during this one. W4s in Virginia and Kentucky proved to be the southern boundary of the opening.

October 23 - W2ORI heard W2NLY at 0620 EST for a single early morning aurora report. There was another fairly good opening during the evening between 1652 and 1925 EST. It covered about the same territory as the 22nd affair although no VE signals were reported heard during this one. At 1830 CST, K0EMQ heard W9ZIH for a little bit of 0-land aurora.

October 24 - W2NLY worked W8QVK on aurora at 0623 EST for another very early morning report. Again, too, there was an evening opening similar to the one on the 22nd. This one started about 1600, ended around 1930 EST. W1s, 2s, 3s, 8s, 9s, VE2s, and 3s were again the lucky ones. From over in Sweden, our VSWL reporter sent in evidence of aurora work at his location. From 1625 to 1736 GMT he heard Dresden TV and OZ3s and 7s. The aurora faded out until 2226; from that time until 2342, LAs, SMs, GMs and OZs came through on aurora.

October 27 - W2NCF, W2ORI and W1PYM sent in reports of a very small A opening that lasted from 1815 to 1910 EST. W1s and W2s seemed to be the only ones in on this one.

October 28 - W8PT worked K0EMQ and heard W9VX via aurora, 2100-2120 EST. K0EMQ also heard W9ZIH at this time. That's the total for this day!

October 29 - Only a single report on A work. W2ORI heard K1AOX, 1851-1853 EST.

F2 Blossoms Forth -- 50 MC., November 1-15

There were some sporadic-E and a fair amount of left-over TE during the first half of November, but F2 was the big news. East-west conditions for this period and especially on into the rest of the month were the best in recorded history. Openings began early and lasted incredibly

[Dec 58]

late -- just before Thanksgiving transcontinental DX was being worked till after 1800 on the eastern end with almost half the path in darkness. On November 23rd both W4GJO and W4UCH worked JA stations between 1700 and 1800 EST.

Getting back to the period under inspection, we do have about a half dozen reports that JAs may have been heard in W1, 2 and 4 on November 6, 8 and/or 9. Signals were weak and no one seemed really sure of what had been heard. The times were awfully early (1330, 1515 and 1245 EST for the three days above). These work out to 0330, 0515 and 0245 JST. After inspecting logs from the U.S.A., British Columbia and Japan (the earliest times mentioned in JA logs were about 0705 JST), we have our doubts. Regardless, however, some impressive things happened, and lets take a look at them. Forgive us if we omit a good deal of the impressive backscatter from this summary -- mentioning all the paths would take the whole News.

236 November 1 - CT1CO came through to the U.S. northeast at 0740 EST and was followed by G and SM stations. G2BVN reported hearing Wisconsin; OH2HK went as far as W8. One or more of the N.B.S. beacons were picked up by W4s IKK and RMU and W6PUZ. Traces of auroral buzz were mentioned around 1000 EST by W1LGE, K2ITP and W4IKK. Shortly after, W1, 2 and 4, VE1 and VO2HA began working Cal., Ore., Wash. and VE7; this lasted till 1300. CX, LU and CE shared late afternoon Es, and there was LU TE to KP4, PZ and VP6 in the evening. Around the globe, VK3-4 had late morning Es, and there were evening steady-sig contacts from VK3 and 4 to Japan.

243 November 2 - CT1CO came in at 0715 and when he worked W1HDQ a little later, it was his first W contact of the season. Later there was a small W6 to W1 and 3 opening, and we have reports of KL7 to JA work. LU opened to PY2 in the afternoon, and VK3, 4 and 6 had night-time QSOs with JA.

226 November 3 - This seemed the period's worst day (guess that was A on the 1st). W1 heard CT1CO only briefly in the morning. There was Fla. to Texas Es 2121-2155 EST. LU heard CE8AE and PY1 and PZ1AE heard CVJ in the evening. VK4 and JA worked once more that night with F-type signals. That was it.

222 November 4 - This was more like it. CT1CO came in at 0709 EST; then such stations as G2BVN and SM6BTT began to work W1, 2, 3 and 8 plus VE1. G2BVN heard K6GRK! ZE7JX reports hearing W0s between 1730 and 1753 GMT. Soon the transcontinental contacts started, and the whole east coast worked the whole west coast plus VE7 and Nevada. Wash. and Ore. worked KH6 and JA while Cal. had KH6 and BS from the NW. Mixed in with all this F2 was an all-day Es opening in which most all parts of the country plus VE1, 2 and 3 heard nearly everything within range at one time or another Add this to the inevitable BS and you had something! We didn't find any EE, but some may well turn up on evaluation. During the evening hours LU worked PY1, 2 and 5; PZ1AE heard CVJ and HC1FS and VK4 worked Japan.

224 November 5 - CT1CO was really early at 0646. OH2HK worked south to Florida, while G3EHY made it west to W9DSP. SM stations had it to W1, 2 and 9 and VE1. KL7 was added to the transcontinental picture as the two U.S. coasts worked each other as late as 1620 EST. Inland Ohio also made it to VE7 and KL7 via F2. The northwest worked JAs. CX1AQ had his only TE of the period to KP4. LU worked KP4 and PJ2AN. PZ1AE heard the Panama beacon for the first time plus HC1FS. VK4-JA evening work continued.

206 November 6 - CT1CO, EI2W, G4LX, G2BVN and SMs were among the stations coming across the pond on this morning. ZE7JX picked up W0DNW at 1743 GMT. VO2HA, VE1, W1, 2, 4 and 8 kept right on working W6 and 7, VE7 and KL7. Wash.-Ore. worked JA. LU TE showed up to KP4, PZ1AE and XE, and there were nocturnal VK4-JA contacts.

208 November 7 - Starting off with CT1CO at 0715 EST EI, G, LA and SM stations had a field day working the whole eastern half of the U.S.A. SM6BTT heard or worked VE1, W1, 2, 4, 5, 8 and 9! The transcontinental F2 skip shortened up a bit, and, besides work like that of the preceding days, the east coast worked into Ariz., Idaho and Montana. Ohio stations worked Cal. in addition to the KL7s. Wash. and Ore. had it to Japan a little later for the fourth straight day. In the evening VK3, 4 and 6 all received steady signals from JA amateurs. VK4 heard VK9 on backscatter, besides.

193 November 8 - European 50-Mc. sigs continued to stream into VE1, W1, 2, 3 and 4, but two stations in Africa caused a little more excitement. ZS3G worked W9DSP and K9ETD in Wisc. and W0CNM in Col. VQ5GF worked W8CMS and was heard by W3VAM and others. Just like clockwork W1, 2, 3, 4 and 8 got through to W6 and 7, VE7 and KL7. W9 also made it to KL7 on this date. JAs were received in Wash., Ore., VE7, Cal., Wis., Minn. and Ill. This was the first day of the period for the last four states. Argentina stations had good TE to KP4, KZ5, PZ, TG9 and XE. VK4 and 6 worked JA.

18 November 9 - Trans-Atlantic contacts were about like those on the days before, except that the W4s weren't in on the fun. Trans-U.S. DX continued excellent with the skip short enough for Montana stations to work W1s. In addition, ZE7JX heard W0s, and W7UFB in Wyo. worked ZS3G. W9RGH logged the CE8AE and OA3AAE beacons around 0915 CST. The JAs came through in Wash., Ore., Wisc. and VE7. TE gave the LUs another shot at KP4, PJ2, PZ and YV.

171 November 10 - CT1CO and SM6BTT were received in W1, 3, 4 and 8. XE1GE from the south was also picked up in W1 from 0957 till 1056 EST. OA3AAE was heard in W4 and W6. We also have a Wisconsin-Puerto Rico report. Transcon work was meager and brief -- W1 to W6 and W4 to W6 and 7. VE7 and Wash. and Ore. had it again to JA. PZ1AE worked LUs on TE that night.

[illegible] November 11 - We didn't spot any trans-Atlantic reports, but F2 across the United States seemed to be in good shape. For an extra, KH6UK was worked as far east as W3OJU and K2HFN. The three west coast states worked both KH6 and JA. PZ1AE picked up TE from LUs and CVJ during the after dinner hours.

168 November 12 - CT1CO, CT3AE and EI2W seemed to be the big three on this date. All were heard and worked in W1, 2, 3 and 4. W8NQD worked ZE3JJ at 1009 EST, and W4IKK heard the AE and AAE stations at 0935. Transcontinental contacts seemed confined to the coastal extremities. W4IKK picked up KH6UK a number of times during the afternoon. For length and strength the W6s and northwest 7s rated their JA-KH6 opening on this date the best of the period. KX6BQ was picked up in W6 as was a JA station in contact with LU9MA. Japanese reception was reported as far east as Mo. Not to change the subject, but there was VK4-VK7 sporadic-E during the Australian evening.
165 November 13 - CT1, CT3 and SM stations were reported by a handful of W1s, 2s, and 8s. W4IKK noted early morning reception of all three NBS stations in South America. There also seemed to be some early Es -- Cal. to Texas and Texas to Fla., Ga. and Tenn. Coast to coast U.S. F2 again meant just that, while JAs came through in Cal., Wash. and Ore. An oddity was W6 reception of ZLs by backscatter from Japan. LUs had TE to PZ and YV, while VK4 had evening contacts with JA and VK9.
168 November 14 - Across the pond communications perked up again, and contacts with one or more countries were logged in W1, 2, 3, 4, 8, and 9. ZE1 and 2 and ZS contacts were made in W2, 4, 8, 9 and 0. Trans-U.S.A. contacts continued. JAs worked into W6 and 7 plus Minn. and Mo. ZLs came through in Cal., and one such station reported hearing the Yellowknife signal for 2 1/2 hours before the W6s showed up. Evening featured more LU to KP4 and PZ TE, VK3 and 4 to JA contacts, and VK4 to VK2, 3 and 5 sporadic-E.
168 November 15 - Another rather good east-west day -- G2BVN heard W1, 2, 4 plus Arizona and Wyoming. LA7Y and OH2HK reported W2, 3 and 4 plus KP4ACH. ZE7JX listed many stations in W2, 7, 8, 9 and 0; a ZE1 is reputed to have heard a W6. K2HPN's contact with ZE1JZ came quite late (1340 EST) and may have been involved with TE at the African end. As the sun moved westward these good conditions did too, and Ohio to California was an example of the short F2 provided. Later still, Cal. and Ariz. worked KL7, and Wash., Ore. and Mont. picked up JAs. Evening brought PZ-LU TE. VK4 and VK5 contacted via Es around their noontime; just about then VK3 was working JA.

Not Much On Two Meters -- November 1-15

We'll have to be careful in summarizing the 144-Mc. news or their won't be any left to tell! There was just one tiny auroral session caught by three PRPers.

November 4 - For the first time in a season of trying, W4LNG had one of his meteor scatter skeds come during an intense 50-Mc. sporadic-E opening. The result? He heard K2GQI S3 compared with nil results on the preceding and following days. This 2204-2300 EST occurrence may strengthen the belief of some that Es can enhance scatter results on higher frequencies.
November 10 - This was our aurora openingette -- 2051-2125 EST. W2ORI heard W8WXV and W8EHW. W8EHW worked W9AAG and W8PT who in turn heard W9AAG and W9JVC.

CERTIFICATE WINNERS

Quite a few PRP CRA certificates went out this month as you can see by the list below. These bring our total of awards to just over 400. Congratulations to:

K1AII
K1DIO
K2JXD
K2PHT
K2QOV
K2SKH
W2TSQ
W3AZZ
K3BED
W3EGJ/4
W3FEY
K4PRG
W4TLC
K5HDB
K6KIN
K6PZM
K6SFG
K6VAC
W6WTL
K6ZTQ
W7KQX
W7LHL
K8COI
W8GJO
W8JNF
W8UMF
K9GBK
K0MOH
K0OSN
JA8BY
VK3ALZ
VK6BE

Correction: The call listed as W3ZZA in last month's list should have read W3ZAA.

THANKS A MILLION!

Even though this is the last issue of the News for many of you, we're not going to say goodby. After all, we hope to be hearing from all of you for at least another month and many of you for another year. Then too, we hope to see as many observers as possible in person and on the air during and after our move to W6-land next May. Also, as we said before, you'll all receive a formal "thank you note" soon after IGY ends. So...without saying goodby, we do want to thank each and every PRP observer everywhere and repeat the closing words of News number one -- Merry Christmas and the happiest and most prosperous of New Years. May 1959 be a good year for the world, for all of us and for amateur radio! 73.

Sincerely,

Connie, W1CIE

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGY Project Supervisor

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THE PRP'59 NEWSLETTER

Number 1 ARRL Propagation Research Project * IGC-59 January, 1959

Here we are again with a new program and a new *Newsletter* to go with it. Sincere thanks to all of you who have affirmed your willingness to carry on with PRP in 1959. Please let us know what you want to see most in this monthly sheet, and we'll do our best to provide as much of it as possible. This *Newsletter* will go out a few days later each month than the old *News*. This is so that material from the whole month before can be included. Most of you, though, will receive your bulletin earlier than before and with fresher news because of our faster mailing classes. This is particularly true in the case of our overseas friends who now make up about half of PRP'59.

While on the subject of overseas mailing, how much help would report forms printed on paper 4/5 the thickness of the present ones be to you fellows in other countries? That's about as thin as we can go and still print on both sides of the sheet. With the U.S. airmail system (7, 10, 15 or 25 cents per 1/4 ounce) the saving isn't much compared with the cost to us of having the forms specially prepared (the Multilith at ARRL won't handle the job). If it would be significant help to very many stations, however, we'll be glad to do it. What do you say?

1959 Frequency Assignments and Beacons

As you've probably already heard, *Australian* amateurs will be permitted to use the 50-54-Mc. band for another year on the condition that they vacate it on a month's notice if required to do so. *New Zealanders* didn't fare so well; they will only have 51-53 Mc. That's even worse than a 51-Mc. c.w. sub-band! LA9T comes through with the good news that the *Norwegian* government has renewed the 50- and 70-Mc. privileges of its amateurs for another year.

Here's the 1959 story on the three *NBS South American beacons* according to Bob Cohen of CRPL: First of all, CE8AE (49.96 Mc., Antofagasta, Chile) and OA3AAE (49.92 Mc., Arequipa, Peru) went off the air at midnight, November 30th. The latter station is being moved to Lima, Peru, where it will probably resume transmissions in a few weeks on *49.96 Mc*. Various sorts of test modulation will be used after that time. OA3AAF (49.88 Mc., Huancayo, Peru) has remained in operation. Its frequency will soon be shifted to *49.92 Mc*.

W5FHS, the Shreveport, La. beacon operated by employees of the United Gas Corporation, shut down at 1700 CST on December 30th. During the week of January 5th construction of a new horizontal antenna was started. When this is completed it will be aimed south across the equator, and operation will be resumed on weekdays between 0800 and 1700 CST. 24-hour operation will be started if and when FCC authorization can be obtained.

Propagation Summary

There isn't room for a full-fledged propagation calendar of the type we've been giving you, but the paragraphs below will help fill in the blank since our last report.

November 16-30, 1958 -- Sporadic-E again made a very good showing. Probably the best opening of the lot occurred on the evening of the 19th. Every section of the U.S. got in on this one. Other E openings occupied evenings of the 21st, 25th, 26th, 29th and 30th. Australians had quite a bit of E activity, too, on many evenings during the period. F2, of course, was the big news and U.S. hams found the east coast - west coast path a good bet on 'most every day. European-to-U.S. F2 held up well, also. There was plenty of backscatter for all. Notable were the long BS paths reported by west coast stations to Hawaii and Yellowknife N.W.T. Japanese F2 signals were heard on practically every day. TE died out for the most part, except on the South American continent. There were many evening openings between Japan and Australia, but signals lacked the characteristic TE flutter. Only a few TE evenings occurred for the African continent. The 25th seemed to be the best night. Aurora was notably lacking, although a small A opening was reported from Vermont on the evening of the 27th.

December 1-31, 1958 -- Here was another good month for F2 and backscatter work. We can't quite claim that it was a good as November, but it can still be placed on the favorable list. European signals continued to come through to the U.S. on many mornings but weren't heard in such great quantity as during November. F2 openings into Japan continued during the first two weeks of December but died out after the middle of the month. W7s still had the lead in F2 work into Japan. Perhaps we can make a very general statement and say that December 7th looked like the best all 'round F2 day to us.

TE was limited again to the South American continent. Surinam-to-Argentina was a good TE route on many nights during the month. Cyprus-to-Southern Rhodesia was reported a few evenings, too.

At last, some aurora to comment on! Openings occurred on the 3rd, 4th, 13th, 17th and 18th. The December 4th opening was perhaps the best one. Stations as far south as Virginia and Tennessee were able to participate - and it's been a long time since we've been able to report this! Activity on the 17th ran a close second: W1s, 2s, 3s, 8s, 9s and 0s got in on this one. The December 3rd opening had a showing in England and Sweden. Activity on the 13th and 18th was rather slight.

Sporadic-E was the big show during December. There were at least twelve days on which good openings took place. The best one was on the evening of December 6th, when almost all sections of the country participated except W6 and 7. There were a number of morning openings, but they were not accompanied by F2 sigs as they have been during previous months. The VKs may have lost their TE, but sporadic-E made up for the loss. E openings between the Australian provinces and New Zealand occurred on many days.

About Reporting in 1959

Seems like a good spot to clear up some questions that have come in about just what we want in the way of reports. First, of course, logs need only be sent in at the end of each month rather than twice a month as before. Also, when we say that only 50-Mc. reports are desired we're including the various commercial stations which operate above and below the 50-54-Mc. amateur range. We do still want to hear about ionospheric DX reception of these right along with the six-meter signals.

Then too, remember that we want detailed reports of all work crossing the equator plus shorter paths open at the time transequatorial DX is coming through. A Florida stations, for example, would list stations in Argentina and Chile which he heard and worked on TE or F2. U.S. stations worked by backscatter from the south at this time would also be listed specifically. If, in addition, there was simultaneous sporadic-E going on, specific reports would be listed of any E work or reception. But, for Es and backscatter not accompanying any kind of transequatorial propagation, simply enter the earliest and latest times signals are observed, the areas covered (by states, say) and the type of propagation. For example: "2/4/59 New England, New York, New Jersey E." The same thing goes for aurora and F2. For the latter it would be helpful to know the highest frequency at which you hear signals (MUF). We realize, of course, that stations far north of the equator will have relatively few specific report entries. Their work is just as important as that of their southern brothers, however, for it will show the background conditions relating to whatever transequatorial work does take place. Oh yes, periods of nil results are to be recorded just as they have been, with specific times.

The World Geophysical Calendar for 1959 shows the following Regular World Days for the next two months (highest priority dates underlined): February 17, 18, 19; March 17, 18, 19; April 14, 15, 16. In addition, March 17-26 and April 16-25 are Regular World Intervals. Please do your best to be active on these dates.

From the Mailbag

Several thoughts about TE fading and frequency selectivity to report on this month: VK3ALZ feels "scatter" is an unfortunate term when describing TE since signals are rarely weak in comparison to the ERPs involved. He says the flutter rate "appears to be always greater at the start of an opening, decreases somewhat toward the peak of the opening, and increases again toward the finish. The remarkable thing is that all signals seem to have the same flutter rate at any particular instant although the stations concerned are widely separated geographically, say JA1 and JA9, but the flutter of any two signals is not necessarily in phase. It is also proved that TE is low-angle stuff -- the big beam boys win hands down on TE whereas on F2 the antennas are not so important." According to VK4ZAZ: "JA1IGY on 50.525 runs 40 watts m.c.w. to a vertical J and invariably comes in half an hour before anyone else and stays in half an hour longer." From VK6BE : "There is now no doubt that in TE openings the lowest usable frequency appears to be about 50.4 Mc. as only stations able to work JAs successfully are those able to shift above that frequency." Note that VK6BE is some 1700 miles west of the VK3s. VK3AHL accounts for recent occasions when he was hearing JAs (flutterless) and also Es to VK4 by surmising that the Japanese signals traveled to VK4-land by F2-skip and then to his location via sporadic-E.

ZE2JV has kept many a TE sked with ZC4WR and reports that the latter "did some most interesting work during the recent TE period. He hooked a CRO to the receiver and put a camera in front of it. I did my best to generate square wave pulses. By using the pulses for triggering the camera shutter he got some first class shots. We are a little shy about shouting the results and want a little more TE to verify our suspicions, but we have shots where a 1/30-second pulse arrives as two 1/60-second pulses with a 1/50-second gap between them." ZS1LA has long been making observations on the reception of European TV stations such as the one at Alexandra Palace, England. Such picture transmissions do a good job of generating almost a continuous spectrum of signals over a band 3 Mc. wide and all originating from the same location. What Fred usually hears from these stations is not more than .5 Mc. or so of this wide spectrum at any given time. "Also, the portion which is received does not always fall around the carrier frequency at 45 Mc. Sometimes there are patches say 30-500 kc. wide at one or more places between 42 and 45 Mc. Why?"

SM6BTT and SM6ANR feel that two different propagation modes exist between their stations and the U.S.A. "One is the normal double F2 reflection that gives us the Fla., La., Miss. and Texas QSOs mostly with strong signals. The other mode causes our signals to the northeastern U.S. and VE1. Signals from these latter areas are weaker and rarely over S9." Furthermore, Len says that the northeast stations come in earlier and stay later than the W4s and 5s. Sounds like these fellows have noticed the Pederson Ray effect mentioned in PRP News No. 17 where an extended signal hop is produced by the high angle ray leaving at angles near tangency. K6RNQ is seeking information on the "Pacific Hiss" -- a smoother sound than a solar flare with F2-type fading. VS6CJ is very much in need of information on improving the performance of his Hallicrafters S-36A. Please write direct to him and use airmail. CO2ZX seeks schedules with Key West, Fla. amateur and asks six-meter operators in that state to beam toward Cuba more frequently.

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Supervisor

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THE PRP'59 NEWSLETTER

Number 2 ARRL Propagation Research Project * IGC-59 February, 1959

New 1959 report forms and instruction sheets should be in your hands by the time you read this. As you can see, there really aren't many changes. The "Date" column was requested by several observers. Otherwise, we just omitted the items which are no longer needed.

The weight of paper used remains the same. Response to the note on this in the January Newsletter has been 8 to 1 in favor of leaving it alone. Most observers pointed out that they could send one or two of the present sheets for their minimum postal rate, so why bother?

Three New TE Experiments

On February 3rd W5FHS, Shreveport, La. resumed 24-hour operation on 50.55 Mc. They have a nice new 9-element yagi built and erected by people in the machine shop group and electronics section at United Gas Corp. This is kept aimed at the Buenos Aires, Argentina area. Keying has been changed to IGC de W5FHS. Should make a fine opening indicator for CE, LU, CX, etc.

More signals for South Americans to listen for are being provided by W4RMU, Jacksonville, Fla. During Feb., Mar. and Apr. Allen will do his best to transmit for the first 5 minutes of each half hour between 1830 and 2200 EST. He promises 100% on Saturday and Sunday evenings and at least 50% for weeknights. His frequency is 50.005 Mc., and high power will be used. Allen will also be transmitting on and checking 144.005 Mc. whenever TE is especially good.

Getting under way Feb. 16th was the TEW Line, a new transequatorial scatter warning network stretching up the U.S.A. east coast from Fort Lauderdale, Fla. to Canton, Conn. Primary stations W4FNR, W4GJO, W4RMU, W4LNG, K4KSM, K4UMK, W3OJU, K2RRG and W1HDQ plus alternates K4HII K4QHN, W4FBL, W4FWH, K4PRG, K4BCP, W3VAM, W2IDZ and W1SUZ have agreed to notify each other by telephone in a prearranged fashion whenever evening TE breaks loose. Perhaps next month we car tell you how it worked out during the season's first openings.

Propagation Summary

Here's what happened during the month of January. Times of day referred to are local.

239 1st - Some F2 to Europe and a sprinkling of backscatter was reported by the northeastern U.S. Australians had sporadic-E during early afternoon and evening. PZ1AE, Surinam, heard CVJ, Uruguay, during the evening on TE.

254 2nd - F2 reports covered work between Europe and the eastern U.S., between Calif., Colo. and Alaska. VKs again enjoyed E and EE from noon to early evening. PZ1AE found the TE path open to Argentina.

271 3rd - F2 between Europe and the eastern U.S. A "good to fair" opening with backscatter. Calif. and Colo. F2 to Alaska, again. Sporadic-E appeared in the late evening for the northeastern U.S. and W8s, 9s, 0s. Colo. worked Texas and Calif. at this time. VKs had E again during late afternoon and evening and some Uruguay-to-Argentina E showed up. PZ1AE heard CVJ on TE.

275 4th - F2 paths included eastern U.S. to Europe, Calif. and Texas to Alaska, W7s to Japan (a weak one). VKs had E around 1800; the western third of the U.S. also exchanged E sigs in the evening. There was TE between LU3EX and PZ1AE.

287 5th - A very weak aurora was reported by the northeast around 1900 EST. Sporadic-E cover practically the whole nation during the evening. VKs had it during morning their time.

6th - In the morning, W2s worked E to the south and southwest; evening brought E from the northeast to the west, south, southwest. E again at noon and in the evening for VKs. PZ1AE-CVJ TE path was open.

311 7th - There was a small amount of F2 from east to west coast. Japan had sporadic-E at 1000 JST; VKs worked each other in the evening. A W1-W4 E opening appeared in the late evenin PZ1AE worked LUs on TE and HC1FS on E.

292 8th - E paths appeared between Calif. and Texas at noon and the northeast and south, sout west in the evening. E again for the VKs! Argentina to Surinam for some TE.

272 9th - Aurora in the late afternoon and evening as far west as W0s and as far south as Ky. Sporadic-E covered the nation in the morning and early afternoon. You know what we have to report for the lucky VKs: E in the evening!

287 10th - Another aurora, starting around 1420 EST covered about the same ground as the 9th opening. There was F2 between Calif. and Fla. W4RMU worked KH6UK at 1445 EST. Calif. had a small opening to W7s 1000 PST. In the evening E again covered most of the nation except for t northeast where activity was sparce. VK3 reported E in the evening.

[illegible] 11th - F2 paths: east to west coast, PZ1AE to southern U.S., Cuba to W7s and VE7s, Japan to Hawaii, Australia to Japan. Morning sporadic-E affected W4, 5, 6, 7, 8, 9, 0. An evening path opened up between Fla. and W0s. E in the afternoon for the VKs. Northeast had aurora in the evening. Surinam-Argentina TE path was open.

255 12th - F2 appeared between Calif. and Alaska. Texas, N.M., Calif. and VE7s exchanged E sigs in the morning. There was TE between Surinam and Argentina.

231 13th - W7s heard good sigs from Hawaii and weak sigs from Japan on F2. In the evening there was TE between Surinam and Argentina and E between Surinam and Ecuador.

228 14th - F2 came through with paths from the east to west coasts, and from Texas to Alaska. Surinam-Argentina TE still carried on.

210 15th - East to west coast F2 and Japan to Hawaii F2 showed up. VKs had sporadic-E in ear afternoon. PZ1AE heard LUs on TE and HC1FS on E.

216 16th - A very small east-west coast F2 opening, VK E work in the evening, Surinam-Argenti TE for this day.

223 17th - F2 included Europe to northeastern U.S., east to west coast, Texas to VE7s, W7s to Cuba and Mexico City. VK4s had sporadic-E at noon. LU3EX worked CT3AE on TE and PYs on accompany E.

240 18th - F2 came through with an east-to-west coast path and a Europe-to-northeastern U.S. path. There was a noon E opening between Texas and Calif. Surinam-Argentina TE path was repor

269 19th - An east-west coast F2 opening and TE between Argentina and Surinam.

298 20th - F2 opened up between the northeast and Calif., between Wisc. and Alaska. There was a Colo. to Texas E path around 1900 MST. VKs had some E in the evening. ZE2JV and ZC4WR worked crossband for some TE.

319 21st - Sporadic-E for the VKs in the evening; TE between ZE2JV and ZC4WR; TE between LU3EX and PZ1AE.

341 22nd - A report of F2 work between Wisc. and Alaska came in. TE paths were the same as on the 21st of January.

332 23rd - TE between ZE2JV and ZC4WR, ZE2JV and 4X4IX; Surinam-to-Argentina path was also open.

338 24th - Surinam-to-Argentina TE and sporadic-E for the VKs in the evening.

325 25th - Sporadic-E between VKs in the morning, between W1s and Minn., LUs and CEs in the evening.

318 26th - VKs got some more E in the evening; Surinam was open to Argentina on TE.

326 27th - The same as on January 26th with a small northeastern U.S. to Calif. F2 opening.

308 28th - TE between ZE2JV and ZC4WR, CT3AE and LU3EX, PZ1AE and LU3EX. LU3EX had an accompanying E opening to Chile.

265 29th - There was a "fair" F2 path between the northeast and Calif. VK6s reported E in the evening. The Surinam-Argentina TE path was open.

227 30th - TE between ZE2JV and ZC4WR; Surinam and Argentina.

217 31st - A good east coast to Europe, and east to west coast F2 opening. EI2W was heard as late as 1315 EST. Calif. worked into Alaska. ZE2JV worked and heard a number of W6s. There was TE for ZC4WR-ZE2JV, PZ1AE-CVJ.

A Complete List of PRP'59ers

W1CLH
W1ELP
W1HDQ
W1IGE
W1OAK
W1SUZ
W2IDZ
K2ITP
K2ITQ
W2LWI
K2LZL
K2RRG
K3EZK
W3FEY
W3OJU
W3VAM
W4CQP
W4CSN
W4FNR
W4GJO
W4IKK
K4KSM
W4LNG
W4RMU
K4UMK
K5ABW
W5EXZ
W5FHS
W5FXN
W5KWP
W5LFM
W5LIU
W5SFW
W6BAZ
W6BJI
K6PBW
W6PUZ
K6RNQ
W7HWO
W7INX
W7ZOW
W7ZPS
W8NQD
W9ALU
W9DSP
W9MFH
W9YIL
W0BTG
W0CNM
W0EDM
W0IBL
CO2ZX
CT1CO
CT3AE
CX1AQ
CX9AJ
DU1GF
F9BG
G4LX
HB9BZ
JA1ARC
JA1BGD
JA2IF
JA3CE
JA3GR
JA6KT
JA7EV
JA8BU
JA8BY
JA8FY
KH6CCZ
LA9T
LU1ABF
LU3EX
LU5CK
LU7AT
LU9MA
OA4C
PZ1AE
SM5BLC
TG9JW
VE1EF
VE2AOM
VE3AGU
VE7AQQ
VK2ABR
VK3AHL
VK3ALZ
VK3ZDG
VK4JO
VK4NG
VK4ZBI
VK4ZGL
VK6BE
VK9XK
VP8CV
VS6CJ
XE1GE
ZC4WR
ZE2JE
ZE2JV
ZE7JX
ZL1ABL
ZS1LA
ZS4DF

From the Mailbag

For those of you who have asked for information on automatic monitoring equipment, Tom, W8NQD, describes his "2-cent scanner." "I use an old low-band FM set with the converter sectior altered to 50 Mc., allowing some range below the band to check the frequencies there. The limiter and discriminator circuits were removed, and a noise limiter and AM detector substitutec Only the oscillator is swung, using a 1-r.p.m. timer motor which moves a penny for a rotor past another penny for an oscillator stator. This gives two sweeps a minute, and with the broad i.f. it will allow several words to be copied as it tunes by a medium strength signal." Logs from VS6CJ, Hong Kong, listed several receptions of "All India Radio" on 53.75 Mc. between Oct. 1 and Dec. 15, 1958. George has since discovered that this was the sound channel of a C.C.I.R. channel 1 experimental TV service. Their picture signal on 48.25 Mc. was never definitely identified. Don't you rush out to look for it either -- A.I.R. was to shift up to channel 4 on Jan. 1st! Jock, VK3ZDG, sent us some interesting notes on the extensive Es which VK has had this summer. It started earlier and ended earlier, and provided weaker signals but much more long skip than last year. JAs have been in more at VK3, but only along with or following an Es sessi Jock thinks the Es reflection may launch a signal into the F layer at a low angle, raising the effective MUF. This may explain why JA openings do not correllate with F2 predictions although 40-45 Mc. commercial stations come through reliably at the proper times of year and day.

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Supervisor

This newsletter is published and distributed by the American Radio Relay League, Inc.,West Hartford, Ct., as a part of the performance of Contract No.AF19(604)-2171 with the Geophysics Research Directorate, Air Force Cambridge Research Center, Air R&D Command.

THE PRP'59 NEWSLETTER

Number 3 ARRL Propagation Research Project * IGC-59 March, 1959

PRP Headquarters will be moving soon, so please start sending all your letters as well as reports to : ARRL-IGC Propagation Research Project, 38 LaSalle Road, West Hartford, Conn., U.S.A. This way you'll get in the new habit and we won't miss receiving anything.

Propagation Summary for February

207 1st - F2 was good to excellent on this day. Northeastern states heard Portugal, Ecuador and the west coast; Florida stations heard signals from Surinam; G4LX heard eastern U.S. Australians had some sporadic-E between 0110 and 0300 GMT. A TE path was open between Argentina and Surinam, and the LUs had some accompanying sporadic-E to other LUs and PYs.

207 2nd - A rather small F2 opening brought CT1CO's signal to the east coast. TE sigs were exchanged between Surinam and Argentina.

206 3rd - F2 and TE as on the 2nd of February. In addition, there was an auroral opening for W1s, 2s, 3s, 8s, 9s, VE2s and 3s between 1930 and 2115 EST.

203 4th - W4s found it a good F2 day and heard CT1CO and various W6s. The W6s in turn heard weak signals from Hawaii. In the evening there was another aurora covering about the same territory as the one on the 3rd did.

193 5th - F2 work occurred between Oregon and Hawaii, between ZC4WR and ZE2JV. HC1FS worked PZ1AE in the evening, and the latter station was heard via TE in Argentina.

197 6th - There was an F2 opening between CT1CO and northeastern stations; the east-west coast path was also open; W4IKK heard KH6s. HC1FS again had an evening QSO with PZ1AE. TE occurred between Cyprus and Southern Rhodesia, between Argentina and Surinam.

184 7th - F2 brought Portugal to northeastern states; there was a good east-west coast path. LUs found TE in the evening to Mexico and Puerto Rico.

184 8th - F2 between Ireland and the northeastern U.S. and between the east and west coasts. A small aurora was noticed by W1s and W2s between 2245 and 2250 EST. There was TE between Surinam and Uruguay, Cyprus and Southern Rhodesia, Japan and Australia, Argentina and Surinam, Puerto Rico, Mexico!

176 9th - W6s and 7s were able to work into Hawaii on F2 and had plenty of backscatter on the side. HC1FS again heard PZ1AE in the evening. The Cyprus-Southern Rhodesia and Argentina-Surinam, Puerto Rico TE paths were open.

192 10th - All TE on this day: LUs heard signals from Surinam, Ecuador, Mexico, and Peru. Japan and Australia exchanged TE sigs, too.

201 11th - Ws had backscatter signals from the south without any sign of F2 work. Several Calif. stations reported hearing OA3AAF on 49.88 Mc., but since this station is now on 49.92 we believe they heard WWI via BS. In the evening there was another aurora for northeastern stations between 2330 and 2350 EST. Argentinians heard PZ1AE and CT3AE on TE and also had some accompanying sporadic-E to the PY5 district.

201 12th - PZ1AE and CT1CO were heard in New England via F2; Japan and Australia found an F2 path open. TE took place between Cyprus and Southern Rhodesia. Argentina again had TE to Surinam and Madeira Islands, with E to other LUs.

203 13th - Cyprus to Southern Rhodesia on F2; Japan to Australia in the morning on F2 and in the evening on TE. VKs had sporadic-E around 0930 GMT. VS6CJ in Hong Kong worked KR6AK on E.

201 14th - Traces of aurora were heard by G4LX between 1610 and 1800 GMT. Hong Kong was open to Japan around 1000 GMT on E. Japan and Australia exchanged both F2 and TE signals. Cyprus and Rhodesia had TE, too.

215 15th - F2 paths brought Surinam, Ecuador, and Peru signals to the east coast. Australian had another internal E opening between 1055 and 1145 GMT. TE between north and south parts of South America and between Cyprus and Rhodesia was in evidence again.

216 16th - This was a really good day for backscatter. All antenna headings were to the south but no SA signals were heard. A sporadic-E opening for the western half of the nation occurred in the evening; at the same time, an aurora was in progress for the northeast. HB9BZ heard ZE1JZ on F2. LUs and CEs exchanged E signals during the evening. TE paths were between Cyprus and Southern Rhodesia, Japan and Australia.

222 17th - LU signals came through to western and southern U.S. locations on F2. Stations in Mexico, South and Central America had a regular field day on TE and, of course, the Cyprus-Rhodesia path was also open.

220 18th - ZE7JX heard some very weak U.S. signals via F2. Japan and Australia had a good F2 opening. LU3EX worked KH6CTC at 2235 for his first opening to that area this year. Hong Kong observer, VS6CJ, heard Japan and Okinawa around 1230 GMT on sporadic-E. TE accounted for this work: Uruguay to Puerto Rico, Cyprus to Rhodesia, Argentina to Surinam and Puerto Rico, Japan to Australia.

220 19th - Just TE on this date: Uruguay to Puerto Rico, Cyprus to Rhodesia, Japan to Australia, Argentina to points north.

230 20th - There was F2 work between Japan and Australia. Hong Kong again received Japan and Okinawa on sporadic-E between 1150 and 1450 GMT. South America, Cyprus and Rhodesia, Japan and Australia again had TE activity.

226 21st - Another very good day for backscatter in the U.S. HB9BZ heard several ZEs on F2; Cyprus was open to Rhodesia on F2 as was Japan to Australia. TE occurred in South America and Mexico, Japan and Australia.

221 22nd - F2 and TE work was much the same as on the 21st of February. In addition, Ecuador and Surinam were heard in the northeastern U.S. on F2.

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214 23rd - W0CNM , Colorado, heard some F2 signals from Hawaii. Traces of TE signals from South America reached W4GJO who promptly made his TEW Line calls. The Japan to Australia path was open for both F2 in the morning and TE in the evening. South Americans and stations slightly to the north of this continent enjoyed TE and E on this day.

221 24th - Hong Kong received Okinawa on sporadic-E around 1420 GMT. The rest is TE: Traces of SA signals again reached Sarasota, Fla.; South American stations and observers in Mexico, Cyprus, Rhodesia, Japan, Australia all got in some TE work.

229 25th - Aurora was heard as early as 0200 EST and evidences that an opening was imminent occurred as the day progressed. The opening began around 1700 and lasted until 2230 EST. Some W0s got into this one. G4LX heard traces of aurora around 1745 GMT. Hong Kong heard Japan and Okinawa on E between 1250 and 1430 GMT. Japan was open to Australia on both F2 and TE, and the Cyprus-Rhodesia TE path was apparent.

221 26th - Californians had an F2 opening into New Zealand. Northeastern U.S. stations and W4s, W5s, XE1GE found the backscatter exceptionally good. Cyprus was open to Rhodesia, and Japan to Australia on F2, also. TE occurred in South and Central America.

213 27th - ZL1ABL worked several W6s and heard one W8 during the morning. VS6CJ heard DU1GF on E around 1350 GMT. There was a fairly short auroral opening for the northeast during the evening; G4LX heard traces of aurora around 1745 GMT. Australia-Japan had good luck with both F2 and TE. A few LUs reported hearing some of their immediate neighbors on BS from the east and northeast during the evening.

202 28th - VS6CJ to DU1GF on E around 1400 GMT. A few auroral signals were heard by W1s at 1900 EST. G4LX heard signals from a station he thought was ZE2JV at 1807 GMT. The LUs had both TE and E activity and also received Japanese signals during the evening. Japan was open to Australia on both F2 and TE.

A few advance reports covering the month of March have already come in and we can give you the benefit of this early information right now. LU9MA reports another opening to Japan similar to the one that took place on Feb. 28th. He worked JA3TO and JA1BZM between 2240 and 2250 on March 5th. Around 2200 on March 6th, LU9MA worked KH6UK and K5DCG. Again, on the evening of March 7th he worked W4CQP.

Ab, W4FNR of Fort Lauderdale, Fla. sent in a letter telling us about two TE contacts that he made during the evenings of March 11th and 12th. He attributes this success to the use of c.w. by both participating stations. During the TE opening on March 11th, he contacted LU3EX. "At our sign off at 0130 GMT there were no readable signals or even detectable carriers.... At the peak of signals, bugs were 100% copy but as the signals go down hill into the flutter, doppler and echo effect, then only slow c.w. sending is readable due to the tremendous time difference in arrival of the various components of the refracted signal." During the March 12th opening, both W4FNR and W4GJO heard LU9MA calling CQ. No other TE signal was heard. "This opening would have gone unnoticed had LU9MA been on A3 as he was actually under the noise level but the c.w. was 100% copiable." Ab ends his letter with a very logical plea for the use of c.w. during TE work.

R.S.G.B. Propagation Program for 1959

Like our own PRP, the Radio Society of Great Britain's propagation study project is continuing into 1959 in two phases -- analysis of IGY data and collection of IGC-'59 data. All 1957-58 aurora reports (mainly 144 Mc.) have been gathered together and given to one observer for study. This work is being coordinated with Sheffield University where auroral reflection is being studied by radar technique in the 18-Mc. band. A committee has been formed to decide the best methods for correlating IGY tropospheric work with various different weather situations Reception reports of WWV (trans-auroral zone propagation) will be grouped and compared with the aurora reports. For 1959 tropospheric data will be garnered from: regular schedules in the 144 Mc. band, reports of signals received from stations more than 250 miles away, the use of Gee navigational equipment and the monitoring of certain TV stations. Any and all reports of v.h.f. auroral and meteor scatter propagation will continue to be sought. In the h.f. range only monitoring of WWV on 15, 20 and 25 Mc. will be of interest. During IGY the R.S.G.B. received logs from about 55 observers each month; some 40 will be continuing this year.

Reminders

Beacon station W5FHS (Shreveport, La.) is now aiming its 24-hour 50.55 Mc. signal toward Buenos Aires, Argentina, and will QSL any heard reports 100% with a special new IGC card....... ZE2JV is operating on 50.040 Mc. with automatic keyer from about 1700 to 1900 GMT each day..... The March issue of the Proceedings of the I.R.E. is devoted entirely to papers about the ionosphere and ionospheric propagation, particularly how these subjects have been studied during IGY. It's not the lightest reading there is, but at least manage a skim of this volume (your library may have it); it'll give you a good look at the present state of the propagation art.

Very 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGC Project Supervisor

This newsletter is published and distributed by the American Radio Relay League, Inc., West Hartford, Conn. as a part of the performance of Contract No. AF19(604)-2171 with the Geophysics Research Directorate, Air Force Cambridge Research Center, Air R & D Command.

THE PRP'59 NEWSLETTER

Number 4 ARRL Propagation Research Project * IGC-59 April, 1959

Propagation Summary for March

188 1st - March was ushered in by excellent F2 conditions. Ecuador, Mexico, Surinam, Aruba, Puerto Rico came through to various parts of the U.S. W4s and W6s found the cross-continent path open. Californians worked into ZL-land. All of these openings had plenty of accompanying backscatter. Japan-Australia and Cyprus-Southern Rhodesia work occurred, too. The VKs and JAs also had a TE opening in the evening.

182 2nd - F2 paths accounted for openings between California and New Zealand, Cyprus and Africa. New England stations had quite a bit of backscatter from the south. In the evening, Hawaiian and Japanese stations were heard in Argentina. Japan and Australia exchanged both F2 and TE reports.

182 3rd - W6s were able to work into Colorado and Oregon via sporadic-E between 0910 and 0929 PST. Cyprus-Rhodesia and Japan-Australia F2 work continued. LUs again heard KH6s and KP4s on TE this night while Japan and Australia had another TE workout.

179 4th - There was TE activity between Argentina and Cuba, Puerto Rico, and the southwestern U.S. Texas stations heard HC1FS for some borderline TE. JAs and VKs found both F2 and TE paths.

180 5th - Traces of aurora were heard in a few Canadian locations during the evening but an opening did not materialize. F2 and TE paths were reported between Cyprus and Southern Rhodesia.

191 6th - TE activity between Argentina and Cuba, Surinam, Puerto Rico, Mexico, W4s and W5s; between Japan and Australia; between Cyprus and Rhodesia.

189 7th - TE the same as on the 6th of March. In addition, Japan and Australia exchanged F2 signals and Hong Kong was able to work into Japan on sporadic-E around noon GMT.

182 8th - Signals from Surinam and Peru reached the eastern U.S., courtesy of F2; Switzerland heard Southern Rhodesia. Hong Kong heard DU1s in the Philippines on sporadic-E during the GMT afternoon. In the evening, TE from Africa was heard in Cyprus and Argentinians again heard Japanese stations. Of course, the Japan-Australia F2 and TE work continued.

189 9th - TE paths included Argentina to points north and the Madeira Islands; Africa to Cyprus; Japan to Australia (also F2); Surinam to Uruguay. Our Hong Kong observer heard sporadic-E signals from JAs and KR6s at noon GMT.

[illegible] 10th - Again, it was mostly TE on this day: Argentina to Brazil, Madeira Islands, Puerto Rico, Mexico, W4s and 5s; Uruguay to Mexico; Cyprus to Africa; Japan to Australia. Another Hong Kong E opening to KR6s at noon.

202 11th - Practically the same paths open as on the 10th with the addition of TE between Switzerland and Africa; Madeira Islands and Uruguay.

195 12th - W6s and ZLs had a small F2 opening in the afternoon. Japan and Australia found both F2 and TE paths open on this day. Japanese stations were heard during the evening in Argentina.

208 13th - Both F2 and TE between Australia and Japan; TE between Cyprus and Africa, Argentina and northern Brazil, Mexico.

216 14th - There was another rather small F2 opening for Californians and New Zealanders during the afternoon while in the morning eastern U.S. stations enjoyed quite a bit of backscatter activity. TE again took the spotlight: Uruguay-Mexico, Hawaii-Australia, Cyprus-Africa, Argentina-Puerto Rico, Japan-Australia.

235 15th - If we were to tell you all the TE paths that were in evidence on this day it would take many more lines than can be spared. Suffice it to say that all the usual routes were open. Japanese signals were heard in the evening in Argentina and Hong Kong heard VK9 on TE.

247 16th- This was certainly an all-out TE month! The well known paths were reported on this day again, as well as on the 17th of March. 260

275 18th - TE in South America; between Cyprus and Africa; between Japan and Australia. Japan to Hong Kong via sporadic-E around noon GMT.

282 19th - Points north and south in South America had TE QSOs. Uruguay and Argentina stations heard Hawaii on TE. LUs came through to Florida locations. Africa was open to Cyprus, as was Japan to Australia.

286 20th - TE again! With all the usual paths well represented!

288 21st - Around 1145 CST there was a small sporadic-E opening between California and Texas. W6s were able to work into Oregon and Washington on E during the evening. Switzerland heard Southern Rhodesia on F2. TE activity held up well in South America and between Japan and Australia. VK4NG heard TE signals copied as "KL7AF --?-- Island, Alaska", in with JA QRM.

263 22nd - W6s caught an E opening into Montana between 1215 and 1300 PST. The usual reliable TE paths were open on this day as well as on the 23rd and 24th. 259, 248

249 25th - F2 and TE exchanges between Japan and Australia. Argentina stations heard Mexico and the Canal Zone via TE.

248 26th - An auroral opening began around 1630 and lasted for the rest of the day. A few stations as far south as North Carolina were heard. W7s got in on this one, too. Cyprus heard Africa and Japan heard Australia on TE.

247 27th - Cyprus-Africa, Japan-Australia had F2 instead of TE on this day. The auroral

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opening that began on the 26th continued right through the 27th. In fact, it looks to us as though it started at 1630 EST on March 26th and lasted until late evening on the 28th. Stations in Kentucky seemed to form the southern boundary of the opening on the 27th. W7s also were quite active.

249 28th - F2 paths accounted for work between W1s and Ecuador, Switzerland and Southern Rhodesia, Hawaii and Argentina, Cyprus and Africa. TE? Well, there was activity between Argentina and Hawaii, Japan and Australia, Australia and Hawaii. Of course, the auroral opening covered most of this evening, too.

246 29th - F2 really picked up: Eastern U.S. and VE3s heard South Americans; Texans received sigs from Argentina; ZLs and VK4s came through to the W6s and VK3ZDK is reported to have heard a W4; Switzerland and Cyprus heard African stations; Japan was open to Australia. The usual TE continued in South America and, again, Japan and Hawaii were heard during the evening in Argentina.

259 30th - W4s and W5s heard many South American stations on F2 and had good luck with accompanying backscatter. In the evening, the same paths were open again on TE. Cyprus, Africa, Japan, Australia, Hawaii had the usual TE activity.

255 31st - W4s exchanged F2 reports with Argentina stations. Switzerland was open to Africa on both F2 and TE. TE held up well and the usual activity was reported.

From the Mailbag

K6RNQ sent us page one from the San Francisco Examiner for March 27th. It tells in hugh headlines about the "Pacific mystery blackout" which began the evening before. This same high absorbtion brought calls to ARRL from low-frequency enthusiasts who thought something was amiss with their receivers since they were hearing nothing at all. See our summary for what else was going on!

Ike, VE7AQQ says that he and VK2ADE will continue their daily skeds (time not stated) on 6 and 10 meters. The latter station has reported hearing 'AQQ as high as S8, but not much has gotten through the other way thus far.

VK3ZDG comments on the several openings to ZL (he thinks it may be backscatter of a sort) and goes on with this non-six-meter item which we quote because of its interest: "I was working VK3ZCN in Ballarat, some 70 miles distant on 288 Mc., with S9 signals; the moon was just above the horizon in the east so just for something stupid to do 3ZCN keyed his carrier for a pulse per 5 seconds and I turned the beam on the moon so that it was rear on to him and listened for possible returned pulses. Of course we all knew that theoretically nothing could happen, but there's no harm trying. Well, nothing did happen as expected, and I continued the contact with the beam back on to him, signals being pretty good. Now when he was transmitting those pulses the note was a real blooper, and about five minutes later when he was having an over, blooping pulses at 5 second intervals beat with his carrier, unmistakably the same pulses that he'd sent five minutes earlier! So what do you think of that on 288 Mc.? This experiment is going to be repeated a few times!"

VK4NG reports a new signal of 49.85 Mc. which has been received quite consistently from the north. It transmits pulses with breaks of five minutes at the hour and half hour. When first put on the air it showed as an unmodulated carrier. Then voices of American installation men were heard for a time. Anyone know what this is? Oh for call letters and identifications on these beacons!

ZS1LA is now listening in on the ZE2JV-ZC4WR schedules to see how far south the TE goes. Nothing yet on six, although both ten-meter signals come through fine.

VS6CJ reports working VU2RM who has just come on the 50-Mc. band. George says that VS6DS has begun listening on six, and should have transmitting gear going shortly, good news since he has an excellent location for working JA.

HC1FS received a QSL from EI2W stating that the latter heard him the afternoon of February 7th. Fred also received a promise from FM7WS to get on six in a short time. Another nice new country!

XE1GE sends word that VP8CV has been having transmitter trouble but should be on the air by now. Jeff mentions that HC1FS and himself have lined up a PRP gang get-together for the weekend of April 18-19. We're not sure exactly what they have in mind, but perhaps it might be interesting to set some dates and times each month when all observers whould try to be available and operating simultaneously. Besides providing some enjoyable contacts, this could show a thing or two about our various propagation paths. Any comments or suggestions?

W4FNR has pointed out how many of the winners in the recent Tapetone contest are or were PRPers. You'll recall that this was a competition between papers on the subject of interference to v.h.f. ham reception. Of the twelve winning amateurs three are in our IGC-59 program and nine were in the IGY project. These include: W6ANN, W6NLZ, W4IKK, W4UCH, W4UMF, W4FNR, W9JAQ, LU9MA, and W8FAZ. Congratulations to them and also to VK2ADE (1st prize winner), K2IUV and VK4MO!

Very 73,

Mason, W1VLH

Mason P. Southworth, W1VLH
ARRL-IGC Project Supervisor

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THE PRP'59 NEWSLETTER

Number 6 ARRL Propagation Research Project * IGC-59 June, 19

After an even month on the highways of the United States here we are in Palo Alto, Calif., with a stack of April and May PRP logs waiting to be reviewed. Sincere thanks to all the PRPe ex-PRPers and non-PRPers who made the trip such a pleasant one for the writer and his wife. Apologies to any observers who have been kept waiting for forms or answers -- these should already have reached you. Now let's catch up with the last two month's DX.

Propagation Summary for April

Northeastern U. S. stations had some aurora, but the best of the month was reserved for fellows at lower latitudes in the form of all sorts of north-south DX. The consistency of such F2 and TE all over the world was remarkable. JAs worked into Australia every day, either in the afternoon or evening or both. Transequatorial paths between Argentina and Chile and places like Mexico and Puerto Rico were open every evening. ZC4WR, Cyprus, worked into ZE and/or ZS each evening except for April 9, 11, 23, 26, 27 and 30 (pretty good for a path with only one station at one end and less than a dozen at the other). More things were happening, too, so here's a specific account of the less regular work:

257 1st - W4, 5 and 6 found the band open to Argentina and OA3AAE near Lima Peru during the early afternoon.

237 2nd - HB9BZ heard ZS and ZE stations during the late afternoon.

216 3rd - W4FNR worked ZE3JU crossband 6/10 at 1447 EST. HB9BZ heard ZS and ZE once again.

215 4th - Florida W4s heard LUs during the afternoon including LU2EW/LU0EW. This fellow turned out to be a portable way down at the southern tip of South America, some 2000 miles south of Buenos Aires. He signed the "2" for his beacon signal and the "0" for actual contacts Between 1445 and 1610 PST, W6PUZ was hearing and working down under to VK4HD.

196 5th - W1CLH picked up W4RMU on BS at 0825 EST. During the afternoon the Floridians again heard Argentina, LU0EW and OA3AAE. LU had an opening to many points north plus Hawaii in the evening, and VS6CJ managed a contact with VK4ZBE between 1310 and 1400 GMT.

196 6th - Hawaii to Argentina again during the LU evening. JAs worked KR6AK and VS6CJ plus VK

217 7th - VS6CJ worked VK9XK and also W6KUY/MM near the Phillipines.

215 8th - LU0EW was in at W4IKK during the afternoon. W6BJI heard ZL1BJ at 1330 PST. Between 1900 and 2015 EST W1, 2 and 3 plus Va. and Quebec had themselves an aurora session. Also that evening W4s worked into Argentina; W4FNR says that a half-hour after he worked LU5CK the latte was coming in 20 miles to the south but not at all for himself. Argentina stations also had it good to both Hawaii and Japan. Quite an evening!

215 9th - LU0EW was heard by the W4s again this afternoon, and OA3AAE was in at W0IBL. HB9BZ heard ZE2 and ZS. Argentina-Hawaii was open once more.

220 10th - W4CQP and W4FNR both logged LU0EW. During early evening W9s MFH and YIL heard aurora on WWI, and a visual aurora was noted in VK3-land.

233 11th - Further Florida reception of LU0EW, and W6PUZ picked up ZL stations and VK4HD.

224 12th - W6PUZ worked ZL1DE at 1346 PST. During the afternoon some mostly east-west sporadic E popped up from Calif., Nev. and Ore. to New Mexico, Texas, Col., Neb., Kansas and Mo.

201 13th - W4CQP heard OA3AAE from 1730 till 2030 EST.

198 14th - W4CQP picked up OA3AAE in the evening this date, and W1 and W2 had a short aurora.

[illegible] 15th - HB9BZ worked ZE and ZS late in the afternoon.

[illegible] 16th - Plenty of the usual N-S F2 and TE; KH6 was open to Argentina in the evening.

[illegible] 17th - Just lots more late afternoon F2 and evening TE.

[illegible] 18th - More of the same (we don't mean to belittle it -- just don't have room to list it!)

[illegible] 19th - Still more plus W1-to-W4 early morning backscatter from the south.

[illegible] 20th - W4CQP heard OA4C and OA3AAE from 2030 till 2300 EST.

[illegible] 21st - Just more you know what.

[illegible] 22nd - And more. Anyone for moving closer to the equator?

213 23rd - W8NQD reports that W1, 2, 3, 8 and 9 were in via aurora.

[illegible] 24th - ZE3JU heard W4FNR at 1240 EST during the latter's test with ZE2JE; an unidentified W3 station picked up ZE2JE at this time. VK4NG heard ZP2AY, Paraguay, at 2350 GMT.

[illegible] 25th - W1CLH heard W4RMU in and out on BS between 0900 and 0940 EST. At 1554 W4FNR worked ZL2DS making 4 continents Ab contacted during April.

[illegible] 26th - W1 and 2 had another aurora from 1600 till 1740 EST. VE2AOM picked up Texas stations via sporadic E around 1030.

212 27th - HB9BZ heard ZE1JZ and ZE2JV at 1700 GMT. VE7AQQ received Australian stations at 1450 PST.

[illegible] 28th - Aurora visited W1, 2 and 3, 2100-2114 EST.

211 29th - VK3AHL notes that the evening opening to Japan was very selective at the northern end; usually there was only time for one VK to work a given JA. For a while JA2IF was only 3-6 db. weaker than VK3ALZ (4 miles line of sight in front of the beam).

[illegible] 30th - G4LX spotted auroral buzz on the 53.75-Mc. British TV stations to his north.

Propagation Summary for May

May was a little different from April. South American TE was off considerably. VK3 work with Japan was way off, but VK4 and 9 to JA in the afternoon and/or evening was open each date except May 5, 12, 16, 17 and 24. There was much sporadic-E in Japan, but only one opening of this type in Australia. Here in the U.S. so many small and medium Es sessions showed up that we have probably missed a few. A smattering of aurora rounded out the period.

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204 1st - W6BJI worked ZL2ABX at 1315 PST. There was evening TE from CX-LU to XE-YV.
194 2nd - VK3ALZ worked XE1FU at 1140 EAST; half an hour later XE1GE heard VK seemingly coming in by BS from the NW. LUs heard OA3AAE in the evening.
185 3rd - Between 1940 and 2017 EST there was a bit of Ind. to La. sporadic-E. Also in the evening CX was open to XE and OA, and VK9 got through to KH6.
184 4th - W1, 2 and 8 shared an aurora; Argentina was open in the evening to Puerto Rico.
186 5th - W6s had a sporadic-E to Texas and New Mexico between 2040 and 2115 PST.
202 6th - More sporadic-E in the western U.S.: 0900-0926 PST it was Ore. to southern Calif., 1020-1140 Calif. to Texas and N.M., and 1216-1254 Ore. to Ariz. LU to XE and VK9-KH6 opened up in the evening.
208 7th - More nocturnal VK9-KH6 plus Texas to Fla. and Miss. sporadic-E 1824-2000 CST.
241 8th - Beginning as early as 1630 CST there were several hours of U.S.-wide Es. The Midwes started by working into W1 and 2. Then south and south-central stations were working each othe plus W9 and 0. Californians found the band open for double-hop to Florida. The finish came around 2205 PST in the form of Ore.- Calif. contacts. LU to XE also worked that evening.
249 9th - From morning till noon the central states had Es to Fla., Tex., N.M. and Col. VK4s worked KH6s in the evening.
259 10th - Miss. and Fla. opened to W1, and ZC4WR worked ZE2JV during their local evening times
264 11th - W4FNR contacted KP4AHQ bright and early at 0921 EST. 1800 eastern time brought Fla. to Texas sporadic-E. VK4 and KH6 got in on the TE.
266 12th - Morning and evening Es in the States: W1 and 2 opened to W4 early in the day and to W5, 8, 9 and 0 and VE1 later on. Also in the evening W6 worked into Ore., Col. and Ariz. on on hop and N.Y. and Ohio by two. Japan had afternoon sporadic-E with JA3-JA8 open and JA7 working JA2, 4, 5 and 6. VK4 worked into VK2, 3 and 5 by "short skip".
264 13th - 0815-0840 PST there was sporadic-E from Oregon to Southern California.
244 14th - Weak Es turned up between W1 and 2 and W0 at about 1915 EST. JA1 had the same to the 5th and 6th districts in the early evening, and VK9 contacted KH6.
229 15th - W1, 2, 3 and 8 had a buzz session on aurora around 2055 EST. Same thing picked up again for these areas between 0200-0315, we're told.
222 16th - Nothing spotted for this date, believe it or not!
224 17th - Morning W1-W4 BS showed up as did Es between Texas and W8, 9 and Ky. W4FNR worked KP4AHQ again at 1142 EST. 1200-1600 it was Fla. to Tex. and La. and also Cuba to Tenn., La. and Tex. In the evening W1, 2 and 3 opened to the southeast, and the central U.S. worked Fla. and Tex. G4LX and ZE2JV got 50-Mc. signals through one way between 1654 and 1730 GMT.
215 18th - There was morning W1 to W4 backscatter and also evening-time Ga. to W1 and VE3 Es. JA7s had their sporadic-E to JA2, 3, 5 and 6.
1[illegible] 19th - Most of the morning produced transcontinental double-hop Es (K6PBW/7, Las Vegas, Nev. called it the best he'd heard) plus work from the middle of the country to both sides. Late afternoon it was W2 to Fla., and evening brought Texas and the southeast into contact with the central states. Fla. also had more EE to Calif. VK9-KH6 was open during their evenin
201 20th - 1834-2115 MST, Es was open from Colorado in all directions.
201 21st - Just a 20-minute Es opening around 1330 from Florida to Indiana.
201 22nd - Late morning sporadic-E up and down the eastern seaboard, from Fla. to the middle west and from Cuba to N.C. and Pa. JA opened to KR6 in the afternoon.
192 23rd - During the morning W1 and 4 had BS from the south, and Floridians worked the KP4s once more. JA1 to JA6 and JA3 to JA8 sporadic-E were in evidence that evening.
177 24th - Late morning and early afternoon Es between such points as: W1 and W4 plus La., W9 and Fla. and Cuba, Conn. and Calif. on double-hop. 1830 to 2015 W1, 2, 3 and 4 worked each other on aurora, and about this time Fla. was open to Mo. by sporadic-E. LU3EX heard K5CGL at 1700 LU-time; JA1 to JA6 and 8 and JA7 to JA4, 5, 6 and 7 were worked on sporadic-E.
203 25th - Evening brought W1, 3 and 8 together on aurora as well as weak Fla. Es signals into W2-land. Other work of the latter kind going on was Ga. to the central U.S. and Cuba to Texas.
205 26th - We found a small Fla. to W2 Es affair in the morning on this date and a larger one from JA7 to JA2, 3, 4, 5 and 6.
208 27th - Everything centered around Japan. Besides their usual TE, JA1 and JA3 both logged stations in JA6, 7 and 8 plus KR6AK during the early evening.
195 28th - Conn. stations found Es to the southeast between 1735 and 1900 EST. VK9-KH6 opened.
195 29th - Early afternoon provided W6s with sporadic-E to Mont., Col., Neb., Kans. and VE6. Both VK4 and 9 were working Hawaii that evening.
177 30th - Two Es patches showed up late in the day and opened Fla. to Mo., and Col. to the NW.
177 31st - Intermittent morning sporadic-E provides paths between Col. and Minn. and Iowa, and also Calif. and Washington and British Columbia. That evening it was Calif. to Col., Mont. and S. D. VK9 got through to KH6 once more.

Points to Remember

1) The South American beacon on 49.96 Mc. is now signing OA3AAE and is located 25 miles north of Lima, Peru; they run 2-20 kw. The station on 49.92 is now OA3AAF in Huancayo, Peru, and it runs 50 watts. No station on 49.88 now, and no stations in Arequipa or Antofagasta.

2) Please continue to send all reports to ARRL Headquarters. Letters can go either to ARRL or to the writer at the Radio Propagation Laboratory, Stanford University, Stanford, Calif.

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Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

THE PRP'59 NEWSLETTER

Number 7 ARRL Propagation Research Project * IGC-59 July, 1959

June sporadic-E brought exciting 50-Mc. conditions, all right, but the really unique things happened on higher frequencies last month. 'Way up at 1296 Mc., W6QDJ/6 and K6AXN/6 worked 400 miles on June 14th for a new record. Mountain locations, a morning temperature inversion and the use of c.w. only helped to get the signals through.

Big news at 220 Mc. was made by KH6UK and W6NLZ who worked 2-way for about an hour beginning at 2135 PST on June 22nd. Signal strength and propagation medium seemed similar to the 1957 work on 144 Mc. This time, however, tests had been in progress for a mere four days instead of nine months. We hear that W6AJF has a 432-Mc. rig just about ready for shipment to Hawaii. Will that band be next?

Sporadic-E finally put in the two-meter appearance which it refused to make all during IGY. W9HOT, Greenville, Ill., was worked on June 11th by W1UAR, Braintree, Mass., and heard by W1LMZ, Concord, Mass. Four days later on the 15th, Italians I1DKB, Naples, and I1SUS, Rome, worked into the English Midlands on 144 Mc. I1DKB, in fact, was heard in Northern Ireland and all over England. On June 17th, five Toronto-area VE3s and W2ORI worked several stations in the Amarillo, Texas, area between 2045 and 2225 EST. Skip was not short at either end on 50 Mc., but contacts over 250-mile distances were reported near the midpoint. Finally, on June 28th, W4GJO, Sarasota, Fla., worked W5SFW, Amarillo, Texas.

Propagation Summary for June

"Es openings, particularly EE, were of greater duration, gave better signal strengths, and were more frequent this month than ever before in my experience." - W6BJI. "At times there wasn't any single hop heard, or the EE was stronger than was the E skip." - K2RRG. These comments sum up the month for the United States (where Es was logged every day) and Japan. The few brief auroras roused but a handful of northeastern stations. Transequatorial propagation was down, with the ZE2JV-ZC4WR circuit workable only once in 18 tries. No South American TE was logged. No JAs were heard in VK2, 3 or 6, and VK4 and 9 were not much better off compared to their results of recent months.

193 1st - VE1s worked W2, 3, 4 and 5 during mid-morning. Eastern W1 opened to W5 that evening, and Oregon reported N. Dak. and VE6 on E, VE4 and the Midwest on EE. The JAs had both morning and evening sporadic-E and worked into VK9 1915-2105 their time.

198 2nd - 1045-1157 EST, Ohio worked W4, Iowa was open to W2 and 3 and VE3AGU heard W5s. Washington to Montana was worked during the same hours Pacific Time. W1 and VE1 were the only areas to log an aurora 1830-2000 EST. VK4-JA TE got through 1800-1943 EAST. Japan had extensive sporadic-E at noon, mid-afternoon and early evening.

198 3rd - N. J. opened to W4, 5 and 8 at 0945 EST. VE1 and W1 got in on this as the morning went along; Cuba-W5 opened right after noon. Signals from Mexico City arrived in W1 and 2 about 1600. W2s listed a fair aurora 1900-2300. VK4 and VK9 both worked JAs on TE during their evening, and JA1, 3, 4, 5, 6, 7 and 8 all had nocturnal Es.

190 4th - Four scattered paths to report: Cuba to W2 and Va. - 1154-1301 EST, Wash. to Calif. - 1430-1440 PST, Fla. to W2 and 3 - 1900-2040 EST and VE7 to VE3 - 2300 PST.

197 5th - Western stations worked the central states 0700-1040 PST. 1159-1259 PST, W7INX heard Es commercial signals peaking NW, possibly from Alaska. VE7 was working W6s on E and Tenn. and Ind. via EE. Calif. to Wash. opened later in the afternoon and in the evening. Almost all possible paths east of Colorado showed up between 1800 and 2215 EST, but we see no further double hop. Nothing from other countries for this date.

210 6th - From 0745 PST, the West Coast had E to everything in range and EE to W1 and W2. The rest of the country shared these conditions for about three hours, after which north-south paths seemed to prevail. Last gasp was W1-W4 around 2230 EST. VK4 and 9 had their TE to Japan, and JA8 worked into JA1 and 2 late in the day.

196 7th - W1s and 2s began getting in-and-out Es from Texas and EE from Arizona around 0913. At noon, everything opened up across the country with E and EE all over. This lasted right through till early evening in the west, but took a mid-afternoon break till 1800 in the east. Then came more work between W1, 2, 3, 4, 5, 8, 9 and 0, and the Middle West hooking up once again with Calif. and Nev. just before midnight.

215 8th - Es was down, but there was enough for W1 and 2 to work W4, and for Wash. and Ore. to work S. Calif. and Ariz. during the morning. At noon, Cuba-N.C. opened, and a late afternoon affair was had by W1, 2, 3, 4, 5, 9 and 0 plus VE2 and 3. Ind. to Tex. was logged at 2100 EST. VK9 picked up JA and KH6, while JA3 snagged JA2 and 5 during their evening.

223 9th - Morning and afternoon openings included W1, 2, 3 and 8 to Fla. and Cuba, and Wash. and Ore. to S. Calif. From Neb. on east, stations had more of the same later on. VK9-JA was on schedule. JA8 to JA1, 2, 3 and 4 Es showed up.

226 10th - So much sporadic-E that we won't try to list it. Both coasts had morning N-S shorties, and from noon till mid-evening just about all the E and EE paths you can imangine were open, including W1 and 2 down to XE and KP4. More JA-VK TE, and JAs shared the fine Es.

221 11th - Practically the same situation. Wonderful U.S.-wide Es from early morning till afternoon and again during the evening. No TE, but much Es for JA1, 2, 3, 4, 5, 6 and 8.

216 12th - Terrific Es all over the U.S. from 1100 EST till nearly midnight. We have a whole page of notes and no space to list them. JAs continued to share the skip. Brief JA-VK9 TE.

218 13th - East Coast conditions started early (0550 EST for W2 to KZ5), continued all morning and then went dead in time for the June VHF Party. Westerners did better, their Es lasting till 2020 PST for Calif. to Tex. and Okla. K7ICW (ex K6PBW), Las Vegas, Nev., worked his home state by sporadic-E backscatter from the east. JAs had plenty of afternoon Es.

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208 14th - Dead band conditions lasted most all day for W1 and 2. VE1 had an early evening opening to W3, 4, 8 and 9. Western states worked each other during the morning. LA9T was heard in Sheffield, England at 2000-2045 GMT. JA sporadic-E was present 2040-2130.

225 15th - N. J. opened to Tex. in the morning, and Cuba to W4, 8 and 9 around noon. Most activity was later on with W1, 2, 3, 4, 5 and 8 working each other as did western stations. Some Tenn. to Calif. was logged. JAs had their Es in the early afternoon.

220 16th - 0823-1210 EST it was W1/2 to W4, 5, 9 and 0, and W8 and 9 to W0. Wash. to S. Calif. opened briefly about noon PST, and there was a minor eastern affair that night. JA Es went on.

225 17th - Another big, booming day with E and EE going on somewhere in the U. S. from noon till midnight. Everything open to everywhere, it seems. JA3, 5 and 6 were the areas affected in that country.

228 18th - Except for spotty morning (W3 to Fla.) and noon (Ohio to W4) breaks, this day's Es came in the afternoon and evening. Most activity was in the eastern and central states, although W7s caught bursts from the Middle West. VK4 worked VK3 by this same mode around 1400 EAST. This was the night for ZE2JV-ZC4WR TE, and VK9 to JA was open.

237 19th - Calif and Nev. were open to Tex. in the early morning. Fla., Ga. and La. worked W1, 2, 3, 4, 5, 8 and 9 in the evening. VK9-JA got through, as did more JA sporadic-E.

226 20th - Everything was late afternoon or evening. W4 and 5 worked W1, 2, 8, 9 and 0 plus VE3; Ind. and Ill. worked Tex.; Wash. and Ore. worked S. Calif. VK9-JA TE went on, and the JAs had afternoon Es.

228 21st - Brief late morning sessions up and down both U. S. coasts plus W4, 5 and 0 to W1 and 2 from 1702 till 2158 EST were all along that line. ZS1LA hooked up with ZE2JV in the morning, all JA areas had Es in the afternoon and evening. VK9-JA opened.

219 22nd - Late afternoon and early evening Es covering the areas near both coasts was followed by a very slight aurora noted only in W1. JA1, 2, 3. 4, 5, 7 and 8 all had Es.

2[illegible] 23rd - Just limited morning Es contacts up and down the East Coast and west as far as Okla. From 2130 till 2230, W1, 2, 3 and 8 and VE3 shared a fair little aurora. JAs had more Es this date than the Ws plus their TE to VK4.

232 24th - Very little. Brief VE3, W1 and W8 Es to Fla. plus VK4-JA TE is all our notes show.

233 25th - Conditions picked up again starting right at 0008 EST with a New England - Middle West opening. Both single and double hop were working in fine style later on from 1800 till 2330 with some scattered contacts around midday. JA1, 3, 4, 6 and 8 all had Es, also.

2[illegible] 26th - Eastern and central states had Es all morning long. They had it in the evening, too, with the west also in to provide more double hop. Japan came up with morning and evening Es, as well.

240 27th - Morning and afternoon Es on the West Coast, afternoon and evening Es on the East Coast, double hop between the two all during the afternoon. Good EE circuits included Wash. to Cuba. W1, 2 and VE3 wound up the evening with aurora. JA Es was all around noon. VK9-JA worked as usual.

224 28th - Definitely an outstanding day everywhere from W1 to XE (who worked on EE). As K2RRG says, "open all day, all over." JAs had two two-hour sessions, but nothing like the W's. Several Florida stations worked all call areas but 6 and 7 in two or three hours.

219 29th - Western states had Es off and on all morning, afternoon and evening. Cuba worked Texas about noon. Central states got a bit of double hop from the West Coast, and W1s, 2s and 3s had to be content with a bit of evening aurora. Yes, JAs had Es, too.

196 30th - Noon openings across the southern states, Calif. to Texas, Texas to Fla. and Ga. to Cuba were about all there was during the day. Evening brought scattered single-hop Es to most sections as well as some aurora noted in W2 only. VK9 and JA had their TE.

Notes

South American observers have a new TE indicator to listen for, a backscatter sounder on 49.64 Mc. operated by the University of Puerto Rico at Mayaguez. Since their transmitting yagi searchlights from north through west, south and east, to north and then back again the other way, the signal will fade periodically. It will also have a buzzing sound due to the pulse repitition frequency. Needless to say, this beacon will be very useful during the coming TE season. For those having receivers which tune below six meters, there is a similar transmitter on 40.68 Mc., also operating around the clock.

Because of the variety of experiments being undertaken this year with the OA3AAE and OA3AAF beacons, their operation may not be quite as regular as before. Also, the type of antenna in use may change. For one thing, the Peruvian experimenters are looking into the discovery that very regular 50-Mc. signals can be sent from Huancayo to Lima by reflection from the ionosphere almost overhead. This emphasizes that PRPers at low latitudes should look for and report shorter-range openings which occur during TE sessions. We believe there may be an intimate connection between the "sporadic-E" and slightly longer paths often worked in the evening and the TE itself. At any rate, continue to check for OA3AAE and AAF since we shall have their logs to go by in evaluating your reports.

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

Number 8 ARRL Propagation Research Project * IGC-59 August, 1959

By the time this issue gets through the Multilith department and into the mailbox, apologies for its lateness will probably be in order. Hanging on a few extra days for more logs to shuttle in from the East has cost us our deadline but made for a better bulletin.

Propagation Summary for July, 1959

As usual, July's mainspring was sporadic E; not a day went by without some short skip somewhere in the U.S. Reports carried many comments about the "long single hop" or "double hop without midpoint stations." Take your choice at this point! Many openings were spotty with respect to both time and location, but July 12 was a really big day and the 18th and 24th were close runners up. One aurora worthy of the name turned up as did several other traces of the "buzz." There was a rare, for July, transequatorial opening between Mexico and South America, the first in this month throughout XE1GE's long experience. ZE2JV was picked up by ZC4WR on the evenings of July 6, 17, 19, 20, 21, 22, 23, 27, 28, 29 and 31. Ray also got through to G4LX on July 1, 2, 4, 22 and 28. The latter says he was also hearing strong sporadi E from Italy at most of these times, and that the TE signals were much steadier on such occasio Looks like Es was relaying the transequatorial waves after they arrived in southern Europe! Before we start our day-to-day look at conditions, two more paths can best be summarized here: VK4-JA worked on the evenings of July 1, 4, 18, 19, 21, 23, 25, 26, 27, 28, 29 and 30; VK9 and JA got together on July 1, 3, 4, 6, 7, 13, 14, 15, 17, 21, 22, 24, 28, 29 and 31. No solstial drop-out for these circuits!

188 1st - Morning Es let Texans work north into W9 and 0, and W6s contact Mont., Wyo. and Col. Ore. opened to Col. and Ariz. about noon. Late afternoon and early evening paths were Calif. and Nev. to Col. and Mont., Mexico to Tex. and Fla. to W8.

174 2nd - W3FEY heard VE1BB 2130-2150 EST. JA2, 3, 5, 6 and 8 had late afternoon Es.

171 3rd - 1300 MST, Nev. to Iowa and Neb.; 1500, Nev. to Texas. JA7 worked JA 3 and 6 at 1830

[illegible] 4th - A good day. The Northeast started working W4 at 0800 EST, and soon all possible east of the Mississippi E circuits were going plus EE to Calif. and Nev. Col. also reported KP4 reception. Single hop kept up off and on in the central states till 2230 CST. VE2AOM pick up K2CBA on aurora at 2317 Eastern time. JA7 worked JA4, 5 and 6 1840-2150 JST.

176 5th - Worked between 0800 and noon EST were Fla. to W1, 2 and 3; Texas to W3, 7, 8, 9, 0 and Mexico; Nev. to VE7, W5, 7 and 0 and Cuba to W4 and 5. Afternoon extended the range of the Floridians to KP4 and Ariz. on EE. Ore. - S. Calif. opened 1600 PST as did Nev. - Neb. at 2015 MST. JA6 and 9 were working JA1 and 7 at 1100 JST. This was the date when XE1GE worked five LUs and two CXs between 1625 and 1710 CST.

182 6th - Mo. opened to Fla. at 0742 CST. Shortly after noon Fla. had good Es to W1, 2, 3, 4, 8 and 9, and CO2ZX worked into W3 and 8. Later, Nev. signals got through to Wash., Ore., W5 and Fla. W6s worked Wash., Ore. and Col. JA7 and 8 worked JA1, 5 and 6 around noon.

17- 7th - Fla. to the Northeast was first and last at 0814 and 2200 EST. In between came more work up and down both coasts plus Calif. to Tex. and Nev. to Iowa. W4GJO heard commercial signals from Honduras in the evening, and VE1 worked W4 and 9. JA7 and 8 worked JA1, 3, 5 and

195 8th - W6s started working Tex. at 0940 PST, and from then on the Texans had good conditions to W4, 5, 6, 7, 8, 9 and 0. W4s worked most of these plus KP4. K7ICW heard fluttering W6s whc were working W3s coming in from the east. JAs had sporadic E at 1040, 1300, 1830 and 2000.

185 9th - Mo. - Fla. opened 0830 CST. W5s worked both east and west during the afternoon. W1 2, 3, 5, 8, 9 and 0 got together in the evening. JA3, 5, 6, 7 and 8 worked morning sporadic E.

231 10th - VE1 worked W3 and 8 0845-1028 EST. Californians logged most of W7 between 1115 and 1635 PST. Later it was the Midwest and VE3 working W1, 2, 3 and VE1. JA1-JA8 Es at 1050 JST.

194 11th - Pa.- Fla. and VE1-Ind. were open briefly late in the day. K2RRG reported a fair aurora at 1913 EST. OA3AAE was heard by CX9AJ and LU2FCD. The latter also heard Costa Rica.

234 12th - Just too much to cover here. Said K7ICW, "It was open when I got up and still open when I went to bed. Worked 91 contacts in 27 states and gave two W1s their WAS. I hope to liv to see comparable conditions again!" Things were the same all over the country all day. KP4-land came through again, and EE commercial signals from Alaska were logged in W6. JA8 reported Es, too, 0830-1500 and 2100-2200.

243 13th - Two U.S. paths open: Conn.- Fla. at 0850 EST and Ind. to Okla. and Texas around 1400. JA7 and 8 worked JA1, 3, 4, 5 and 6 0908-1030 and again 2030-2140 JST.

264 14th - Calif. to Wash. was open 1155-1258 PST. Period.

245 15th - W0IBL heard Nev., Fla. and KP4ANN 0906-1040 CST. That evening, the Southeast was open to W5, 9, 0 and Puerto Rico. Also, northwestern states were working each other and east to Tenn. and Ala. JA7 worked JA3 and 6 0939-1028 JST. This was the day for aurora. W1LGE heard N.J. and Ohio via this mode at 1000 EST, W5LIU noted buzz on WWI 1300-1400 CST, and W1, 2, 3, 8, Va. and VE2 all worked each other in the evening.

261 16th - Nev. opened to Tex. about 0730 MST. Nothing then till late afternoon when Col. reported Nev., Tex., Cal., and Ore. The latter state was also working Wyo., Ariz., Tex. and S. Calif. XE1GE picked up La. around this time. JA7 worked JA1 and 6 0926-1008 JST.

240 17th - Mo. was open to W4 and Iowa to Utah and Nev. as early as 0630 CST. During the day many contacts were made back and forth across the central states, and Calif. reported S.D., Wash. and W5, 9 and 0. VQ4CW heard ZE2JV that evening.

221 18th - Another day with too much to tell about. From 0735 EST till 0015 MST all sections of the U.S., VE2, 3 and 7, Cuba, Mexico and Puerto Rico were involved with both single-and double-hop Es. W4FNR found the KP4s coming in almost as well no matter when he aimed his beam!

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22 19th - This good day got started with W1-Fla. contacts at 0800 EST. Best conditions came the late afternoon and evening, however, when most sections reported E and there was some lif.-W4 EE. XE1GE heard Cuba and W4, 5, 6, 9 and 0. JA7s logged JA3, 4, 5 and 6 at noon.

08 20th - Texas was working Fla., Ala. and Calif. at 0915 CST. Fla. to W8 opened at noon. ter on there were scattered eastern and western openings, and Mexico was working the central S. JA7s were heard in JA5 and 6 0933-1335 JST.

7 21st - XE1GE noted W5s around 1230 CST. 1551-1630 PST it was Ore. to S. Calif. An hour ter W6s, 7s and western W5s began working each other, and this kept up till about 2100. tween 2241 and 2310 W8s and 9s were heard weakly in Fla. JA8 to JA 1, 2, 3, 4, 5 and 7 was od between 1147 and 1305 their time.

18 22nd - Nothing this date till noon EST when Fla. worked Okla., Tex., Kan. and Ill., and 2ZX logged Tex. stations. At 1117 PST there was a brief Calif.-N.D. encounter. Evening ought Fla. and Calif. E to central states plus Nev.-W4 EE.

18 23rd - Morning hours featured single hop up and down the West Coast. Late afternoon and ening brought in the eastern U.S., and there was some double hop between Oregon and W4. JA7 t together with JA1, 3, 4 and 5 1110-1300 JST.

81 24th - A very fine day with something in the way of Es for everyone between 0750 and dnight, although no particular path was open more than an hour or so. Double-hop Es was stly for southern parts, but Oregon was in on it. JA1, 3, 4, 5 and 6 had Es noon and evening.

25th - Between 1935 and 2115 Nev. opened to Okla. and Mont; at 2341-0010 it was Wash. and e. Col. had brief Es to Ill. and Iowa around 1830. JA7 worked JA6 about 1900 JST.

2 26th - Morning was for the southeast and southcentral states. W4FNR worked his 21st KP4 the month on six! Afternoon brought good conditions to most all the eastern half of the untry and still nothing to the West. At 2000 PST, however, Calif. was open to Wash., Ore., l. and N.M. to round out the U.S. day. VK4-VK5 was open via Es during the afternoon, and 1, 2, 3, 4, 5, 6, 7, and 8 all shared Es 1115-1320, 1830-1900 or 2244-2329 JST.

27th - Between 0745 and 0950 EST New England and Fla. were working each other and the ntral states. At 0920 K2RRG snagged K5IQL in N.M. on EE. 1700-2015 MST Nev. and Col. were tting through to Mo. and Okla. LU9MA and LU7MAZ worked LU3EX and CX1AQ that evening.

28th - Nev. worked Tex. 1220-1240 MST. Ga. and Mont. hooked up 1900-2200 EST. Col. and e. reached Mo. and Wisc. 1845-1945 MST. That was all.

1 29th - A Fla. report of working Ohio and W. Va. at 1258 is all we have from the States. 7s had good Es to JA2, 5 and 6 at 1218 and 1810 JST.

4 30th - Everything happened in the evening. Colorado and points west worked among emselves, and most states east of Texas did the same. JA7-JA6 sporadic E was at 1750.

8 31st - Three paths open in the U.S.: Mo. to Fla. from 0745 till 0814 CST, Fla. to W1 and 1038-1215 EST and N.J. to W5 around 2020-2100 EST. JA3 found Es to JA6 1800-1830 JST.

tes

ZE2JV and ZC4WR have been busy with another intriguing experiment according to a note on e back of Ray's July log. It seems they have measured the time it takes for the '2JV signal travel to Cyprus and back again. This comes out 62 milliseconds minus 22 for delay troduced in rebroadcasting, or 40 milliseconds for the round trip. Computed delay for a eat circle signal following the ground route comes out 38.8 milliseconds. Our slide rule says eir observed delay would mean a reflection height of 437 miles at the path midpoint if one-hop r similar) propagation was involved, or two reflections at around 110 miles up for two-hop bout that too, for the "billiard ball" TE mode). This seems a bit low, and it will be teresting to see whether such measurements can be duplicated and/or refined. The quantity volved is a tough one to measure with the required accuracy, and we're eagerly waiting to find t how Ray and Chalky did it.

Have you been noticing how the Far East and African TE have kept going after the same mode s closed down for the season in South America? We're a bit glad to see it happening this way, r it backs up something that shows clearly in our check of TE's seasonal variation during the Y. Although TE does seem to peak at the equinoxes like everyone has said right along, what ppens to it in between depends on where you are. If, at your longitude, the magnetic equator south of the geographic one, the former will have summer in December and January and winter June and July. What's more important, you'll have guite a lot of TE in December and January d almost none in June and July. These are the situations in the Americas. The reverse holds r VK-JA and Africa where the magnetic equator isnorth of the regular one. A nice thing about is is that equatorial spread F, so called, works just this way. Spread F is the name given an effect which causes vertically-transmitting ionosphere sounders to show a diffused return th no particular height associated with any one frequency. Since spread F disappears just as st after a magnetic disturbance as TE does, it looks like whatever scatters the sounder pulses y also scatter TE as well. This is something we're looking into, at any rate. Getting back the seasonal effect, ZS1LA writes that a friend of his has been getting TV pictures of fair tertainment quality since he moved to Northern Rhodesia. These are from the BBC channels one d two and come through in the early evening. Furthermore, they were better in July than in y and June!

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

Number 9 ARRL Propagation Research Project * IGC-59 September, 1959

Propagation Summary for August, 1959

Sporadic E turned up somewhere in North America every day but August 4, 20, 26 and 28. This is down from July, of course, but pretty good as Augusts go. Es was less frequent in Japan, but "down under" VKs began heading into their peak season. Back in the U.S. and Canada there were four aurora openings, one a lengthy daytime affair. South American TE began its current season on August 27th with two more openings on the 28th and 30th. Most of the LU and CX contacts seemed to be with KP4, but HC, TG9, VP5 and XE were also in the running. None of this TE reached the States, but W4FNR heard many 28-Mc. signals from south of the border on the flutter mode.

VK-JA, VK-KH6 and ZE2-ZC4 transequatorial scatter paths were all way ahead of similar circuits in the Americas. Looks as though this is the way things are in June, July and August, and we predict the tables will be turned in December and January. Anyway, here are summarized results for amateur forecasters and to save space in our calendar: VK4-JA TE worked on August 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30 and 31. VK9-JA opened August 2, 4, 5, 8, 10, 11, 12, 13, 14, 25, 27, 28, 30 and 31. VK6 had F-type propagation to JA August 18, 21, 22 and 23 and a TE session on August 28. VK9-KH6 got through August 6, 10, 11, 12, 13, 14, 27, 28, 30 and 31. ZE2JV hooked up with ZC4WR August 1, 6, 7, 8, 12, 13, 15, 18, 19, 20, 22, 23, 24, 25, 26, 27 and 28. Now for some details on things less regular.

214 1st - Ind. to Tex. opened 1203-1330 EST. 1825-2100 PST W6s worked Ore., Col. and N.M. N.Y., Ohio and VE2 shared aurora 2303-0049 EST. LU9MA worked CX9AJ and CX2DN 1500-1600 his time. JA7 to JA5 and 6 Es was at 1115 JST. VK4 had the same to VK3 and 5 1515-1550 EAST.

[illegible] 2nd - W6 and 7 shared Es between 0740 and 1020 PST. Just before noon VE1 and W1 were working W8, 9 and 0, an opening which was repeated later that evening. A little after 1300 Ind. got through to Col., Wyo. and Neb. JA7 logged JA1, 2, 3, 4, 5 and 6 between 0959 and 1340 JST. VK4 worked VK2 and 3 again 1435-1705.

240 3rd - Fla.-Mo. and Calif. to Ohio, N.Y. and Ontario were reported early in the morning. W1 to W9 and 0 and W3 to Tex. and Mo. were worked at noon. Between late afternoon and 2300 most possible paths between VE1 and VE7 were open for at least a while. There was much double hop but it stayed to the north. Usually Es-happy Floridians had to make do with a few W0s. JA7EV tells us of sporadic E to JA1, 3, 4, 5 and 6 1725-1950 JST.

236 4th - Only the TE mentioned above.

221 5th - Iowa to W4 opened briefly around 0900 MST. Nev.-Tex. worked at 1230. 1800-1900 Wash.-Ore. worked Mont., Wyo. and Col. and W7ZOW/ZPS heard a K4 in Tenn. Nev.-Ala. EE was going at the same time. Between 2100 and 2200 W3s worked W5 and 0. W4FWH heard W0BTG, Neb., and K7ICW worked N.M., Tex. and Okla. JA7 worked JA3 at 1010 and JA6 at 1740 JST.

227 6th - 0900-0924 CST Mo. opened to Ariz. and Calif. W4FNR logged Texans and KP4s from 0836 to 1400 EST. During early evening Calif. was open to W4 and 5 and Ariz. W9ALU picked up K5RGG while all this was going on. JA7 to JA1, 2, 3, 4, 5 and 6 opened 0852-1052 JST.

212 7th - Mo.-Fla. worked 0720-0800 CST. W0EDM, Iowa, contacted K0OUL, Neb., at 0704 MST. Between 1025 and 1115 EST Ky. opened to La. and Tex. Late afternoon brought Calif. in touch with Ariz. and N.M., and evening provided Calif.-Ore. and Ga.-Tex. contacts. JA7 Es was at 110

204 8th - Calif. to N.M. and Ariz. was first between 0958 and 1118 PST. More of the same a little later plus stations east to Tex. Between 1710 and 0108 EST W1, 2, 3, 4, 5, 8, 9 and 0 and VE1 had a field day working each other. 1920-2025 PST VE7AQQ had himself some EE to Texas, Calif. and Idaho. VK4NG tells of reception of JA8BY 1014-1025 via F2 and VK9XK at 1700 EAST.

204 9th - 0824 EST W9YIL/MFH heard W1WHL. 0930-1200 Fla. worked W1, 2 and 3, W2ZKE heard CO2MW and W4FNR had partial contact with VP9EI, Bermuda. During afternoon Fla. had more of the same plus Iowa. Ind. worked W5. Still later W3 reported W1, 5, 0 and VE1, VE1 logged N.C. and Mich. and VE3AGU heard Maine, Vt. and N.H. via sporadic E backscatter from the west.

202 10th - W8NQD, Ohio, heard W5s at 0830 EST. 1045-1100 it was N.J. to W9 and 0. 1348-1415 Fla. to Tex., Ariz. and Calif. was open as was Iowa to W5. W4GJO says that more W5s were in and out at 2142. JA1-JA2 Es turned up at 1100 JST.

200 11th - Only daytime work was Iowa-W3 around 1015 MST. Evening brought many paths: W1, 2 and 3 to W4, 8, 9 and 0; W3 to W5; W4 to W9 and 0; Neb. to Ariz.; Nev. to Okla. and Kans.; Ore. to Mont., Utah, Minn., Ill. and Calif. 1758-1835 JST it was JA7 working JA1, 2 and 3.

196 12th - W6s worked Wash., Ore. and Col. at various times morning to noon. 1310-1540 they reached out to British Columbia and Alberta. The latter province kept coming in during evening as did Mont. and W5. 1700-2120 MST Nev. was working W2, 3, 5, 7, 9 and 0 plus VE6. To the east W1, 2, 3, 8, 9 and 0 and Tenn. W4s worked each other while Fla. was open to W0 only, it seems. JA1 worked into JA7 and 8 on Es between 1710 and 1730 JST.

194 13th - In the morning VE1 worked W3 and Va., and Calif. was open to Wash., N.M., Tex. and Tenn. Eastern and central states saw much Es in the evening and all we can say is that W1, 2, 3, 4, 5, 8, 9, 0, VE1 and Cuba shared many a contact from 1700 till nearly midnight EST. JA7 was working JA3, 6 and 0 1024-1101 JST.

181 14th - Fla. had an opening to KP4 at 0952 and one to Tex. and Okla. 1405-1422 EST. 1305-1409 PST it was Calif. to Mont. All else was nocturnal with such paths as Cuba to W1, 2, 3, 4, 8 and 0; Fla. to W3, 5, 8, 9 and 0, Calif., Nev. and Wash.; N.M. to N.C., S.C., Iowa, W5, 6 and 7; Wash.-Ore. to W5, 6, 7 and 0.

190 15th - N.M.-Calif. started the day off 1815-1915 MST. 1220-1305 EST Ind. worked Fla. From 1400 till 2330 EST there was good but spotty Es over much of the country including double hop from Ore. to Ohio, Ind., Tenn. and Ky. 1730-1855 PST. Fla. logged W2, 4, 5, 9 and 0; Col.

worked into W3, 6, 7, 8, 9 and 0. CO2ZX heard W4, 8 and 9. JA7-JA6 worked 1120-1231 JST.
201 16th - Looks as though aurora kept up from 0200 in the morning till about 2009 at night. W8, 9 and Minn. report buzz signals from the first time until 0325. W0IBL noted aurora on the Collins signal at 0834-0930. Other logs from W1, 2, 3, 8, 9, Va., Wash., Ore., VE1, 2 and 3 cover from 1415 to 2009. The few afternoon Es paths were Fla. to W5 and 0, Tenn. to Tex. and VE1 to W1. CX9AJ and LU3EX picked up OA3AAE 1110-1215 their time. VK4 had Es to VK3 and 5 2105-2224 EAST, while JA7 had it to JA4 and 5 0937-0959 JST.
224 17th - W2IDZ heard weak aurora signals from upper N.Y. state 1630-1712 EST. Evening Es was from W1 and 2 to Ky., Tenn., Mo. and Ark. and from W3 to W0. Down south CX9AJ heard OA3AAE; LU2FAO worked PY1 and 7 and LU9MA contacted PY1 and 2.
18th - VE1 worked Va., Del. and Pa. 1535-1637 EST. W1 and 2 reached Fla. 2000-2120 EST. LU9MA picked up PY1 1800-1820 his time.
215 19th - Spotty and weak Es from Fla. to Ky., W1 and 2 from 1045-1330 and Col. to Texas and La. around 1800 MST; this was all in the U.S. From 1815-1850 LU-time LU9MA had still another contact with Vitoria, Brasil, 3200 km. away.
20th - VK4 to VK3 between 1925 and 2005 EAST was all there was but the TE.
21st - 2130-2230 PST Calif. opened to Wash. and VE6 while Nev. stations worked VE6 and Mont. VE2AOM worked W2SOQ on aurora 1835-1857 EST.
243 22nd - N.M. to Tex., Nev. to Tex. and Okla. and Ind. to Col. were worked in the morning. Calif. to N.M. and Ore. came at noon. W4IKK picked up N.D. and Minn. 2200-2300 EST.
23rd - Fla. to W1, 2, 3 and 8 was open intermittently all morning. We have an Ind.-Tex. entry for around noon. Late afternoon and early evening featured Nev. to Tex. and Okla.
245 24th - 2200-2230 PST it was Calif. to Mont. That's all.
25th - Conn. to Fla. opened 0922-1105 EST. JA7 worked JA4 and 5 2248-2322 JST.
26th - Only the TE.
27th - Nev. was open to E. Tex. 1735 and 1858-1945 MST. This was the South American opening night for TE. LU3EX and LU7AT logged KP4, TG9 and XE plus OA3AAE 2200-2340 their time. LU2FAO heard OA3AAE also 0045-0118 next morning.
28th - From 2126 to 0125 LU-time CX and LU stations worked and heard HC1, KP4, OA3AAE, PY1, VP5, XE and YV (marine radio and channel two TV). VP5FP, Grand Turks Island, was the 27th country for PRP observer LU3EX.
29th - 0800-1000 EST W4FWH logged W2s and 3s. Between 1515 and 1946 PST Calif. stations worked Col., Ore. and Wash., while Nev. was open to W5. LU7AT heard OA3AAE at 2130 LU-time.
30th - W8, 9 and Tenn. were open to VE1 1935-2128 EST and to W1 2125-2340. LUs had more TE to KP4 and XE plus mid-range reception of OA3AAE. This was 2140-2343 LU-time.
31st - Tenn. to W5, Col. and Minn.; Mo. to W2, 3, 8 and 9; Neb. to W4 and 5; Col. to Ill., Iowa and Mo. These were the early evening Es paths reported.

News and Notes

Here's one from W4FNR to start us off: "8/29/59 while working W4RMU (325 miles) on scatter sked I had both ionospheric and tropo scatter. The odd part is that at times there were two distinct signals due to difference of arrival and Doppler effect. In a word Allen was QRMing himself and I actually had to detune in favor of the best signal!"

ZS1LA of Worcester, South Africa, has begun nightly c.w. skeds with ZE2JV, VQ5GF and ZC4WR. Transmissions are on 50.036 Mc. between 1830 and 1835 GMT.

Those of you in the Far East who pick up a c.w. or pulse signal on 49.84 Mc. are probably hearing test transmissions from Poro Point, Philippine Islands, to Onna, Okinawa. The 2 kw. transmitter may be operated either c.w. or pulse or alternately both. In any case, there are breaks at 0 to 2 and 30 to 32 (occasionally 30-35) minutes past the hour. Experimental hours are 1800-0200 JST (GMT + 9). There is a similar setup at Okuma, Okinawa, transmitting toward Japan on 49.68 Mc. From Sept. 26 until Oct. 17 both rigs will divide their power between the regular yagi and a dipole at right angles to it. Please let us know what you hear from them.

All this is to learn more about an increase in signal strength noted in the evening near the equinoxes over the Poro-Onna path. It looks to us as though this is the same as the "Es" type contacts made in Argentina, Uruguay, Brasil and Chile while TE is in progress. It may interest some PRPers to know that there isn't supposed to be any sporadic E at such times! That's why all these entries have been grouped for special study during our program. A second group consists of paths longer than single-hop Es can, in theory, provide. These are usually between stations working TE and stations somewhere near the magnetic equator. Paths like LU-PY6/7, LU-OA, PZ-OA, PZ-HC, ZE-VQ and JA-DU are typical. All these turn out to have very similar characteristics. Lastly we have the one or more kinds of TE. South and Central Americans, for example, seem to get mostly the fluttering variety which peaks at 2100-2200 path midpoint time. This is just about when the shorter modes are at their best. A funny thing is that the 40-Mc. backscatter sounder at Puerto Rico doesn't see this kind of TE at all! Theirs peaks about three hours earlier and fades out just when their mid-range echoes (and all the amateur 50-Mc. work) are starting. More on this and TE elsewhere next month.

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

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Amateur Radio and the URSI Meeting

The writer has just returned from the latest joint meeting of the International Scientifi Radio Union ("URSI" from the organization's initials in French) and the Institute of Radio Engineers. It's not unusual for there to be some active and many inactive radio hams taking part in these affairs, but this time not one but two of the papers presented dealt directly with amateur radio results.

John Chambers, W6NLZ, told the URSI Commission on Tropospheric Propagation all about his contacts with KH6UK on both 144 and 222 Mc. He sketched an interesting history of Pacific Coa temperature inversions as related to smog and v.h.f. communications and then told his modern version of the old ham story -- successful completion of the impossible.

At one of the Ionospheric Propagation Meetings the writer reported on PRP and what has been done this summer with the resulting transequatorial scatter data. You may recall that the Air Force Cambridge Research Center has been studying the PRP sporadic E reports while here at Stanford we have specialized in what happens at night near the equator.

We started off by showing typical paths which have been worked on 50 Mc. across the Americas, Africa and the Far East. Then we explained how low-latitude evening propagation seems to divide by path length into three categories as described last month. See from the September results below how often TE, medium- and short-range propagation occurred at the same times in South America? After showing a sample of one observer's results to indicate how faithful hams are with both positive and negative reports, we presented a series of plots of the daily variations seen on various paths. All around the world TE, medium and short range all proved to be at their best between 2100 and 2200 path midpoint time. Comparison of these curves with 20-40 Mc. backscatter results taken at the Virgin Islands and Puerto Rico leaves one with the impression that professional experiments have not thus far been measuring the same thing that amateurs work on higher frequencies with their more sensitive equipment. On the other hand, we demonstrated a relationship between 50-Mc. short-range work in South America and the "Far East anomaly" studied by the test stations in Okinawa and the Philippines.

Next we showed the seasonal variations which TE has exhibited in the Americas and the Far East. The preferred solstice notion mentioned in the August Newsletter was used to tie TE up with a phenomenon known as equatorial spread F. This bond was drawn tighter when we demonstrated how an outburst of magnetic activity will eliminate or greatly reduce the evening TE. Inverse correlation with magnetic activity is another characteristic of spread F. We closed with some remarks on the upper frequency limits of TE. Having the first PRP results, a paper about the Far East anomaly and another on the TE echoes observed at Puerto Rico all on one program made for a most interesting afternoon. We wish every PRPer could have been the

Propagation Summary for September, 1959

"Thirty days hath September" but not much non-equatorial six-meter DX. In North America, sporadic E showed on only nine days. Aurora scored 11 appearances, but on 11 other days there was nothing at all. A pretty typical September.

Lower-latitude stations had average conditions for September, too, but in their case this was good, so good that we're covering the more routine paths right here in summary fashion. In South and Central America, TE, medium- and short-range evening propagation were all observe on September 3, 5, 6, 7, 9, 10, 11, 12, 13, 15, 18, 19, 22, 24, 26, 27, 28 and 29. Only on the nights of September 2, 4, 8, 17 and 30 was nothing spotted. On the 1st and 14th only medium range got through with OA3AAE heard in Uruguay and Argentina. On the 16th LUs, CXs and PY1s heard each other by backscatter from the northeast. The 20th, 21st and 25th brought poor to fair TE and medium range but no short-range loggings. On the 23rd the only report was CX1A hearing XE1GE. CX1AQ, CX9AJ, LU2FAO, LU2FCD, LU3EX, LU7AT, OA4C and PY5GK are the stations responsible for all this information.

In the Far East the compiled logs of JA3GR, JA7EV, JA8BU, K6HGP/KH6, VK4JO, VK4NG, VK4ZBI andVK4ZGL provide this information: VK4-JA TE was worked on September 1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 28 and 29. The same path was spanned by F2 on September 13, 19, 20 and 25. VK4 contacted KH6 on September 2, 3, 4, 5, 6, 7, 22, 23, 26, 27, 28 and 30. VK9XK worked or heard Japanese TE on September 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 24, 26, 27, 28, 29 and 30. Papua to Hawaii was open on September 2, 3, 6, 7, 8, 9, 13, 14, 18, 23, 25, 26, 27, 28 and 29. VK6BE heard F2 signals from JA on September 3, 6, 11, 23, 24, 26; on the 30th he had both steady and fluttering signals. Bob also reports hearing DU1IGY on September 3, 6, 7, 8, 23 and 26. VS6CJ heard JA's on September 7, 10, 11 and 20, and heard or worked 9M2DQ (Langkawi Island off the western coast of northern Malaya) on September 10, 15, 16, 20, 23, 24, 26, 27, 28 and 29.

ZE2JV and ZC4WR made their Southern Rhodesia-Cyprus TE circuit work on the evenings of September 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 22, 23, 25, 26, 27, 28, 29 and 30. One party or the other missed the sked on the 3rd, 15th, 21st and 24th, leaving the 4th, 19th and 20th as definitely negative nights. ZE2JV credits an equinoctial dip in TE MUF (which made reception of Cyprus 70-72-Mc. signals less consistent this month) with causing stronger signals on 50 Mc. Ray says that the MUF is 3-5 Mc. lower than last year at this time and that signals from VQ4 and 5, excellent last year, are now infrequent and marginal. ZS1LA had no results from the schedules described last month but he continues to log European TV, jamming stations and harmonics. Fred, too, says that conditions are not so good as during September, 1958, and that French TV signals from Caen came through at night with flutter fading only twice this month but were quite consistent in the past.

Sep 59

Whether or not you use these figures in your private propagation forcasting, or even read all the way through them, they ought to impress you with how consistent this TE business is. Now on to the propagation calendar of less regular modes.

[illegible] 1st - Only what was described above.

270 2nd - Spotty Es from W1 to Fla. and Ga. 1750-1930 EST.

258 3rd - Aurora: 1700-1840 EST W2 worked Ind. 1850-2100 W1, 2, 3 and 8 all contacted each other. 2038-0131 VE2AOM heard W1, 2, 3, 8 and 9. W0IBL heard strong aurora 2000-2030 CST.

240 4th - 1630-2000 EST W1, 2, 3 and Ohio and Va. shared another aurora. Between 1400 and 1430 LU time LU3EX and LU7AT heard W4PLI, K4YVJ and PY1XW.

220 5th - Just after noon W4FNR worked KP4s and heard VP5FP, Turks Island. W1, 2, 3 and 8 and VE2 and 3 were all busy with aurora between 1907 and 2123 EST.

200 6th - Pretty good Es over the eastern U.S. from 1753 EST till around midnight. W1 worked W4, 5, 9 and 0. W4 opened to W2, 3, 5, 8, 9 and 0. VE2 contacted W4, 5 and 0. Cuba heard Va. The farthest west path was Col. to W8 and 9.

192 7th - Daytime Es was as follows: 0736 EST W4RMU heard VE3AET; 1054-1120 EST Ind. worked N.M.; 1118-1210 MST Nev. worked W5; 1230-1305 PST Ore. and Wash. opened to W6. Evening brought bigger openings such as W1, 2 and 3 and VE2 to W8, 9 and 0; VE3 to W4, 5, 9 and 0; W9 and 0 and Mont. and Wyo. to N.M. and Ariz.; Col. to W5, 6, 8 and 9 and Kans., Ore. and Wash. Wash. and Ore. to Calif. and Nev.; VE7 to Calif. and Utah.

199 8th - At 1933 MST W0CNM, Col., spotted poor Es to Tex. Between 2030 and 2130 Nev. was open to Tex., Okla., Kans. and Mo.

209 9th - Just the TE.

201 10th - Ditto.

203 11th - VE2AOM heard K2EVJ on aurora at 1926 EST. Between 1900 and 2125 W4FNR heard TE signals fluttering in from the south. One called Ab, but no identification could be made.

195 12th - 0721-0910 PST W6s worked into Ore. and Wash.

189 13th - VE2AOM heard weak phone signals on aurora 1824-1840 EST but could not ID them.

196 14th - TE only.

184 15th - 2151-2200 EST brought auroral exchanges between VE2 and N.Y. state. VK4 worked VK2 and 3 via sporadic E between 2157 and 2333 EAST.

169 16th - Nil except for TE.

171 17th - Same.

168 18th - Aurora 1901-2325 EST brought contacts for W1, 2, 3, 8, 9 and Va. and VE2 and 3.

176 19th - 1815-1845 EST W8NQD heard W1, 2 and 3 via aurora. W6PUZ heard LU3EX and LU9MA on TE 2010-2027 PST. LU3EX heard K5DCG by TE at 2252 LU time.

186 20th - K2RRG picked up aurora signals from N.Y., Pa. and W8 1600-1655 EST. More buzz between 1827 and 2220 involved W1, 2, 3, 4, 8, 9 and VE2. VE2AOM heard VE4DI on Es at 2310.

183 21st - W0IBL heard aurora on the Collins signal at 2200 CST.

189 22nd - Nightowl W1CLH logged aurora 0200-0300 but says there were few on. More buzz was discovered in W1, 2 and 3 and VE2 between 2239 that evening and 0138 next morning.

183 23rd - W4FNR worked LU1DCK with steady F2-type signals at 1923 EST. 'DCK mentioned that he was also hearing JA stations. From our Argentine logs LU3EX and LU7AT heard K4JWC and K4KCS between 2045 and 2100 LU time.

184 24th - 2214-2335 LU time CX9AJ, LU2FAO and LU2FCD all worked K5DCG.

176 25th - LU3EX worked KP4AHX on F2 1253-1300 LU time.

165 26th - CX and LU were open to YV, KP4 and Fla. from 1350 till 1512 LU time. CX9AJ heard K5DCG 2005-2025. KH6 was coming in to Argentina and Uruguay 2155-2325. 2311-0100 it was the W6's turn to contact CX and LU. In the meantime Fla. stations were working W8, 9 and Tex. on E and Calif. on EE. This was 2005-2245 EST. VK6BE worked 9M2DQ for just the second time in two years at 1428 WAST.

164 27th - 0930-1117 EST Fla. and Ga. were working Tex., Mo. and KP4. 1340-1354 brought more Fla. to Tex. 1321-1355 CST W0IBL heard HC1FS on F2.

163 28th - LU3EX heard K5DCG on TE at 2142 LU time.

160 29th - 1138-1207 JST JA7EV heard JA6JU on sporadic E.

157 30th - VK6BE picked up the Okinawa test station on 49.68 Mc. with the strongest signals yet received. It was S9+ for half an hour, but no KR6 six-meter activity could be stirred up. Bob notes that this signal has been heard before every TE opening into Japan, but has never been heard with an F2-type signal. The Philippines station, DU1IGY on 49.84 Mc., also comes in with a TE-like signal but more rarely. By contrast, 9M2DQ hears steady, non-fluttering signals from both Okinawa and the Philippines.

October News via W1HDQ

W3OJU reports LU and HC in the Washington area on the 4th and 14th. On the 18th there were commercial signals from the south and traces of backscatter through the morning but no 50-Mc. DX heard there. Then, after most DX-chasers had given up, HC1FS and HC1JW came through with very strong signals for about an hour beginning at 1400 EST. Some W1s have reported European TV signals heard up to 48.25 Mc.

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

Number 11 ARRL Propagation Research Project * IGC-59 November, 1

PRP In 1960

"Send only four more forms unless you want reports for 1960." So read notes at the botto of several October logs. We hope you all share this willingness to carry on into the new year because that's exactly what we're going to ask. Evening equatorial propagation is still a mystery, one that's growing more interesting all the time. How can one mode cause propagation over paths from a few hundred to several thousand miles? Any connection with v.h.f. satellite signals dropping 12 db. when they're received from toward the equator in the evening? TE is just starting down sunspot hill, and it's important to find out what happens to it.

We know it's been nearly a full three years for many of you (though it doesn't seem possi- ble), and you really deserve a vacation. Unfortunately, there aren't any replacements we can call in to take over. In every case there is no amateur nearby who could do as good a job as you. In some cases there aren't any amateurs nearby at all! Will you continue to help? Und our present contract we can collect and process reports through March, 1960. It seems likely we can make a new arrangement to cover the whole year. Either way, we're counting on you.

The same plea naturally goes for those stations we've contacted about supplying tape recordings. This new phase of PRP will have continued worth as long as the project lasts. Sonagraph analysis of your tapes will show what fading rates are present on TE and other signa Different paths can be compared, and a good deal can be deduced about what goes on between you and the other station.

Propagation Summary for October, 1959

F_2 MUF's rose regularly into the 40's, but October was still a quiet month for six-meter men in North America. HC's came through on October 2, 3, 6, 18, 24, and 25, but except for the 18th only southern U. S. stations could get in on the fun. These same southerners contacted LU's on the 3rd, 4th and 8th. Hawaiians were worked on October 2 and 5, but only by W6s.

PRPers detected minute amounts of Es on October 4, 14, 24, 25 and 31. Poor to fairly good auroras showed on October 1, 3, 4, 5, 24, 26, 30 and 31.

Elsewhere, 50-Mc. conditions across and around the equator were booming. There were so many consistent low-latitude paths that we're using this graph to show who worked whom and when

October, 1959	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
CX,LU, PY5 TE	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X		X	X			X	X	X		X	X	X	-
CX, LU, PY5 medium range		X		X		X	X	X			X	X		X					X	X	X		X		X	X	X		X	
CX, LU, PY5 short range		X			X	X	X	X	X	X	X	X	X	X		X	X		X	X	X		X	X	X	X	X	X	X	X
XE1GE TE to CX , LU	X	X	X	X		X	X	X	X	X	X						X			X			X		X	X	X			
XE1GE to HC		X		X						X									X				X	X						
OA4C to KP4, XE, YV						X					X			X		X			X	X										
CT3AE TE to CX , LU, PY1/3					X	X	X	X				X	X																X	X
FF8AP to CX, LU					X	X	X	X	X			X	X	X		X				X			X	X		X		X		
ZE2 - ZC4 F_2-type signals	X		X	X				X						X									X					X		
ZE2 - ZC4 TE-type signals		X								X	X		X	X	X	X	X	X	X	X			X	X	X		X			X
41.25-Mc. Caen TV TE to ZS1LA	X				X			X			X	X	X		X	X	X		X	X			X		X		X	X	X	X
VK4-JA daytime F_2 signals			X				X	X		X	X			X		X		X	X	X	X	X		X	X	X	X			
VK4-JA evening signals	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X
VK4-KH6 evening signals								X	X	X									X											
VK9XK-JA evening signals		X			X	X		X	X	X		X	X	X	X	X	X	X	X		X		X							
VK9XK-KH6 evening signals								X	X	X			X																	
VK5-JA evening signals								X	X			X	X		X	X														
VK6BE-JA F_2 signals			X		X			X			X			X	X	X			X		X				X					

The first three entries cover all TE, medium-range (to OA, PY6 and 7) and short-range (CE, CX, LU, PY1, 2, 3, 4 and 5) evening work logged by CX1AQ, CX9AJ, LU3EX, LU7AT and PY5GK. All but PY5GK also contributed to the list of contacts with FF8AP, Dakar, French West Africa.

The ZE2-ZC4 data came from ZC4WR's lot of ZE2JV's 50-Mc. test transmissions. Besides VK9XK and VK6BE we are indebted to VK4JO, VK4NG, VK4ZBI, VK4ZGL, VK2ABR, VK3AHL, JA1BGD, JA3CE and JA3GR for our Far East information.

Other notes with a TE slant: We were pleased to get the first log in some while from faithful IGY observer PZ1AE. Rene heard both TE and HC's on the 27th, 28th, and 29th, and picke up OA3AAE on the 31st. Both LU3EX and ZE1GE believe they heard the 49.68-Mc. Okinawa beacon. LU3EX heard the pulsed signal on October 6, 11, 14, 19, 26 and 28; XE1GE picked it up on the 26th, 27th and 31st. VK6BE thinks he's been hearing TE TV from Novosibirsk, Russia, on 49.75 Mc.

Now on to the in-again, out-again modes.

151 1st - K0EIC, Rapid City, S. D., heard aurora 2250 MST.

146 2nd - HC1JW worked K0GWL at 1250 and was heard by W5LIU 1300-1500 CST.

145 3rd - W5LIU heard HC's 1220-1515 CST. XE1GE heard ZE2JV 1250 CST. Between 1515 and 2136 EST W1, 2, 3, Ill., VE2 and 3 all shared an aurora. VE3AGU heard weak buzz signals at 2330. K0EIC picked up some more 0130-0200 MST next morning. At 1900 EST W4FNR heard LU1?? working a KP4. 2116-2202 his time LU3EX heard the W5FHs beacon and then worked ten Texas W5s. 1255-1330 HST K6HGP/KH6 worked LU4CQ and heard LU9MA.

49 4th - K2RRG says LU4DFN was heard by K3CSL in Pa. 0820 EST. LU3EX heard and worked Fla., KP4 and XE via F_2 1420-1842 LU time. CX1AQ heard a few words from a W3 at 1905. K6HGP/KH6 worked LU4HG 1115-1125 HST. W2ZKE reports a W1/2/3 aurora 1605-1656 EST. K0EIC heard the buzz at 2245 MST. W0CNM, Col., logged poor E_s to Ill. 1815-1845 MST.

156 5th - VE2AOM heard W2FDI by aurora 1612-1705 EST; W1 and N. Y. state came through 2304-2315. K0EIC and W7INX mentioned aurora at 0100-0130 MST and 2155-2210 PST, respectively.

175 6th - 1222-1228 CST W0IBL worked HC1JW; the latter said his beam was lying on the floor where he'd been fixing it! W5LIU continued to hear HC1JW till 1445 CST. LU3EX worked KH6DEF. at 1915 LU time. Two hours later he and LU7AT worked and heard K5 DCG, Brownsville, Tex.

173 7th - Just what's up in the calendar.

156 8th - W4FNR worked LU2KE 1243 EST. Signals sounded like TE to Ab, but his report from the southern end was S9+40 db. and steady. 2242-2300 LU time, LU3EX, LU7AT and CX9AJ heard K5DCG.

9th, 10th, 11th, 12th and 13th - See the TE scoreboard. 154, 150, 148, 155

156 14th - W1LGE heard W8CVM/mobile in Flint, Mich. via E_s at 1605 EST. 156

15th, 16th, and 17th - See Above. 161, 168, 170

172 18th - This was the big F_2 day for the eastern U. S. At 0815 EST W1SUZ heard W4RMU and WW by BS from the east. Between 1310 and 1530 EST HC1FS and HC1JW were heard or worked by W1LGE, K2RRG, W3VAM, W4CSN, W4FWH, W4IKK, K4KSm, W5LIU, W9YIL?MFH and W0IBL. W1SUZ heard HC1JW while driving the N. Y. Thruway near Troy. W4IKK noted several 2s and 8s coming in from the south on BS during the Equadorian opening.

19th, 20th, 21st, 22nd and 23rd - All quiet but the TE. 174, 176, 176, 189, 195

172 24th - W4IKK heard aurora on WWI 0150-1240 CST. W6OKR and K6RNQ heard E_s to Denver, Col., about noon PST. HC1JW was heard by W2IDZ and worked by K2RRG 1445 EST. W1 to Fla. and Ala. E_s turned up 1600-1900 EST. K2RRG heard a few weak 0s at 1720.

188 25th - 1130-1200 PST brought Calif.-Hawaii F_2! K6RNQ worked KH6BKD and KH6BTV; K6HGP/KH6 worked K6LFA, K6PRF and K6ZTQ. W1CLH heard HC1s JW and FS 1430-1515 EST. W6OKR and K6RNQ heard K5IQL in N. M. via E_s around 1700 PST.

192 26th - K0EIC heard aurora 2215-2300 MST.

- 27th - See the calendar.

- 28th - W1SUZ heard aurora at 2105 EST.

- 29th - Just the TE.

- 30th - W1, N. Y., N. J., Mich., VE2 and VE3 all had aurora contacts 1543-2100 EST.

162 31st - More aurora, this time from 1415 till 1845 EST and involving W1, 2, 3, 8, 9, and VE2 K0EIC heard unidentifiable buzz next morning at 0030 MST. W5LIU and K7ICW reported Texas to Calif., Nev. and Ariz. E_s 2257-0040 CST.

Six Meters at T3

Keep your eyes peeled for an upcoming QST article, "Six-Meter DX Operation at Fletcher's Ice Island, T3," by W1IJD with W1WFJ and W1FVY. In case you hadn't heard, there was 50-Mc. activity all last summer from a chunk of ice located 74 degrees north and 130 degrees west in the Arctic Ocean. Besides working KL7CDG and KL7CJN on a sort of ionospheric scatter, the fellows at KG1FN found quite consistent propagation over distances in excess of 2000 miles.. Eventually, nine states in W7, 8, 9 and 0 plus VE 4 and 6 were worked, and California and Utah were heard. These contacts began around 1830 their time (2230 CST) at the earliest. Signals sounded like sporadic E but were more consistent and over greater distances than normal E_s. Openings were often but not always coincident with aurora sessions in the United States.

TE Through the Exosphere?

There's a new theory to explain TE. Or at least some TE. Tatsuzo Obayashi of the Radio Research Laboratories of Japan suggests that signals launched along the earth's magnetic field lines can be focused, carried a thousand miles or more into the exosphere and returned to earth across the magnetic equator. After working out the math of the mode, Obayashi set up a 27-Mc. backscatter experiment looking south from Hiraiso. Echoes at the predicted 4600-mile range were seen on several evenings last December and January. They don't jibe with any JA-VK ham work, that period being a poor one for TE in the Far East. We look forward to finding out what happened to the Hiraiso echoes when the equinox came.

Dr. Helliwell, here at Stanford, has pointed out that the theoretical treatment of the exospheric mode overlooks the continuum of ionized field lines surrounding the ones carrying the signal. This would mean no focusing along the lines. Because and in spite of this objection it would be interesting to see whether the TE signals you work are arriving from a low angle (perhaps seven degrees for the billiard ball mode) or a higher angle (15 degrees or more for the exospheric mode). You might compare results with a beam well above ground (low angle) and a dipole near the ground (high angle). Better yet, check with a dipole at different heights. Optimum pickup angles for various heights above perfect ground are as follows: 1/2 wavelength high - 30 degrees; 1 wavelength - 16, 48 degrees; 1 1/2 wavelengths - 10, 32, 57 degrees; 2 wavelengths - 8, 23, 40, 60 degrees. How about giving this a try?

HAPPY HOLIDAYS in case the next bulletin doesn't arrive before then!

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

mber 12 ARRL Propagation Research Project * IGC-59 December, 1959

The way our deadline stretched this month it's a good thing we passed along season's greeti in the last issue. Apologies for a somewhat late newsletter, and we hope you've enough Christma spirit left to forgive us. Special thanks for the cards several of you sent in; they were much appreciated.

As explained last month, PRP is going to continue collecting reports into 1960. We want to watch the falloff in TE propagation through at least one more season. Some of you who never had a bit of TE all last year have questioned whether we still want your logs. The answer is yes. They provide a background of what is going on with the other 50-Mc. modes, tell us for sure where results are negative and allow us to print the complete story of the month in the newslett The following would be pretty empty without items from fellows who heard no TE.

Propagation Summary for November, 1959

This time last year we were writing about lengthy east-west F_2 sessions across the Atlantic, the United States and the Pacific. This year W stations would have had little out of the countr F_2 if it hadn't been for those faithful Columbians, HC1FS and HC1JW. Contacts with them and/or southerly backscatter were managed November 1, 2, 3, 7, 8, 9, 10, 14, 23, 24, 28 and 29. Nothin any farther south was heard, although our CX and LU logs show activity at least some of the time that HC's came through.

Transcontinental F_2 (or at least backscatter from the east or west) showed up November 15, 17, 19 and 29. Hawaii was heard in the States on the 1st and 30th, ZL came in on the 1st, and a VK station was reported by VE7AQQ on the 25th.

This year brought poorer sporadic E but considerably more aurora than November, 1958. Unite States E_s was reported on November 14, 16, 19, 20, 21, 23, 26 and 28. We have aurora notes for November 1, 2, 4, 11, 21, 22, 26, 27 and 30. "Nil" dates in North America were November 5, 6, 11, 12 and 18.

Observers CX1AQ, CX9AJ, LU3EX, LU7AT and PY5GK reported their usual evening openings still going strong. Transequatorial signals from places like XE, KP4, PZ and YV were received on November 1, 2, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17, 18, 20, 22, 23, 24, 25, 26 and 27. The longer path to CT3AE opened on the 5th and 6th, while just over the equator HC-land was worked on the 5th and 12th. Medium-range signals from Peru came in November 2, 5, 6, 8, 9, 12, 13, 15, 16, 17, 20, 22, 24, 27 and 28. PY6 and PY7 were heard November 3, 4, 5, 8, 9, 10, 11, 12, 15, 24, 26 and 28. Short-range work between CX, LU and southern PY was logged on November 3, 5, 6, 8, 9, 1C 11, 12, 13, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27 and 28. Evenings with no results occurre just about once a week on the 7th, 14th, 21st, 29th and 30th. Nocturnal log entries from HC1FS show work with PZ1AE on November 7, 9, 15, 22, 23, 24, 25, 26 and 27; XE on the 1st, 2nd and 7t KP4 on the 22nd; OA3AAE reception on the 22nd and 25th. Fred writes that he has what seems an S9 pipeline to PZ1AE, and has heard the Okinawa signals many times around 2115 EST to midnight.

Across the pond, ZC4WR received F_2-type signals from ZE2JV on November 2, 3, 4, 5, 6 and 14. TE signals from the same station came in November 1, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 18, 19, 20, 26, 27 and 30.

VK4s worked into JA during the afternoons of November 3, 4, 5, 6, 7, 8, 9, 15 and 20. Eveni openings came November 1, 3, 4, 5 and 9. These dates are from the logs of JA1BGD, JA3GR, JA8BU, VK4ZGL and VK4ZBI. When VK4NG's usually extensive report arrives we may be able to add some more to the list. VK2ABR lists daylight JA signals on the 3rd and 4th. VK3AHL logged Japanese stations the afternoons of the 2nd, 3rd and 5th. VK6BE reported JA's and/or HLKA in Korea coming in November 3, 4, 7, 15 and 24. VK9XK had TE to Japan on the 1st and 15th.

Now for the details on things more sporadic.

161 1st - W4IKK started the month off by hearing aurora on WWI 0100-0200 EST. KØEIC, S. D., noted aurora 0030 MST. At 0730 EST W4IKK picked up W1s via backscatter from the northeast. An hour later he and almost everyone else in W1, 2, 3, 4, 9 and Ø were working HC1FS and HC1JW. Thi and southerly BS from W stations kept up till around 0930. Hawaii began to come through in Calif and Ariz. about 1110 PST. Backscatter from the west stayed in until 1500, and a half hour later W6FZA worked ZL1BJ.

170 2nd - W4FWH heard HC1JW 0800-0815 EST. W1LGE received the same station 0910-1000. Our log from HC1FS shows contacts with W1, 2, 3, 4, 5 and 9 between 0930 and 1015 EST, and one with W5LIU at 1230. Incidentally, W5LIU himself called in at the PRP office the other day. Herb will be moving to New Hampshire after a short stay in W6. At 1830 EST W1HDQ noticed a visible aurora and some signals which continued till midnight. KØEIC reported aurora 2330-2400 MST.

167 3rd - HC1FS worked W8INQ 1350-1355 EST.

156 4th - W4IKK detected aurora on WWI 0120-0140 EST.

153 5th - Just what was summarized above.

159 6th - Same.

163 7th - K2RRG worked W4RMU via backscatter 0820-0835 EST. 0920-1018, W1LGE was hearing the same station plus W4IKK.

175 8th - Again it was backscatter from W4RMU that led off; W1LGE picked him up 0903-0932 EST. Then W1SUZ, K2RRG and W3FEY all reported HC1EX (a new station on six), HC1FS and HC1JW between 0940 and 1016.

165 9th - HC1FS worked into W1, 2, 3 and 4 from 1000 till 1030 EST.

[illegible] 10th - LU9MA was worked by W6AJF and heard by W6BJI about 1030 PST.

175 11th - See the summary.

[illegible] 12th - Ditto.

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193 13th - VE3AGU heard weak aurora signals 2135-2230 EST. At that time K2RRG was working W8s while W1CLH reported fairly good aurora to W1, 2, 3, 8 and VE3NW 2230-2330 EST.
151 14th - 0930-1000 EST, W1HDQ heard the 48.25-Mc. BBC sound for the first time this year. K6RNQ heard CVJ and W6 and Ariz. on backscatter 0850-0909 PST. K7ICW, Nev., heard K5OUM, Tex. at 1050 PST.
134 15th - 0945-1005 EST, W4FWH heard W1 and W3 c.w. signals coming in from the northeast and fading badly. Probably backscatter. W6OKR heard W6NLZ on backscatter from the northeast 0806-0830 PST.
177 16th - K7ICW heard sporadic E from Texas 1733-1745 PST.
165 17th - 1030-1130 EST, K2RRG heard the 48.25-Mc. BBC signals. 1205-1243, he was hearing K7ALF, Ariz., and three W6s. W6BJI worked N. J., N. C., and Fla. 0820-0955 PST via the same F
[illegible] 18th - See the summary.
[illegible] 19th - 1253-1110 EST, W4FNR picked up W6s and VE7AIZ on F$_2$, while W6BJI reports signals fr Fla., N. Y., Conn. and Mass. during the same period. 1939-2010 EST, W1SUZ logged Fla. W4s on sporadic E. CO2ZX heard W4 and W5 on E$_s$ 2110-2342 EST.
15[illegible] 20th - 1810 to as late as 2130 EST brought W4s good sporadic E contacts with W1, 2, 3, 5, and 0. The convenient hour brought everybody in on this one.
156 21st - W1LGE heard W4IKK on BS 0907-0910 EST. At 1210 W1HDQ was hearing European TV as hi as the BBC video on 51.75 Mc. 1825-1940, W1SUZ, W1LGE and VE2AOM all reported aurora. Shortl after 1800 PST K7ICW was hearing W5s, and W6BJI and K6RNQ were hearing E$_s$ to Ariz.
175 22nd - 1920-0230 EST, W1, 2, 3, Tenn., Ohio, Ill. and VE2 all had themselves some aurora. First reports were from New England; the last entry was W4IKK hearing WWI. VK3 and VK4 worke each other on sporadic E 1135-1147 EAST.
190 23rd - 1030-1045 EST, W4IKK logged E$_s$ to Texas. 1428-1530 PST, W6BJI was hearing XE1GE and W6 backscatter. 2043-2050 EST, CO2ZX picked up fluttering signals from K5DCG.
208 24th - W1LGE heard W4RMU's backscatter signal 1008-1020 EST. There was more VK3-VK4 E$_s$ around 1010 EAST. 1900-2026 EAST, VK9XK worked VK4s on sporadic E.
229 25th - VE7AQQ reported hearing a c.w. burst from VK4BR at 1345 PST.
[illegible] 26th - At 1631 EST W4IKK picked up W5SFW with E$_s$-type fading. Around 1920 VE2AOM was heari weak auroral signals. 1320-1430 LU-time, LU7AT heard LU0ACC maritime mobile who was aboard an oceanographic ship near VP8. 1820-1835 EAST brought more VK3-VK4 sporadic E.
221 27th - More good aurora starting off about 2000 EST in W1 and 2 and VE2 and 3. Soon W3, 8 and 9 and Tenn. and Ky. were also involved, and it was 0230 next morning when the last log ent was made. 1313-1329 HST, K6HGP/KH6 worked LU1MBJ. 1410-1415 LU-time, LU7AT heard K6GRJ.
230 28th - 0830-1150 EST brought the best north-south F$_2$ and backscatter of the season. Almost everyone east of the Mississippi was hearing each other and HC1FS and HC1JW. W4IKK also picke up OA3AAE, but that was as far south as the opening went. Our farthest west report was from W0CNM who heard Denver stations on backscatter. Later on (1310-1455 EST) HC1FS worked into Tex., Ariz. and N. M. 1901-2055 EST, CO2ZX heard XE1GE, W5 and Ill. via sporadic E. From 200 till 2143 we have reports of Ga. and Tenn. to Tex., Okla., Kans. and N. M.; Ill. to Ala. and La.; and Tex. to Col. and Calif. After midnight there was another hour of E$_s$ from Ill. to Ala. as well as Ga. to Tex. VK4ZBI and VK4ZGL worked VK7 on sporadic E 1912-2004 EAST. Around 220 they were doing the same with VK3.
226 29th - 0840-1005 EST, W4CSN, W4FWH and W4IKK reported HC1FS, HC1JW and OA3AAE. HC1FS hims mentioned working Tex., Tenn. and XE1GE. W4RMU logged OA3AAE 1000-1042. At 1314 W1SUZ heard W6BNS(?) very briefly with rapid QSB. VK4 had quite a bit of E$_s$ this date, working into VK7 about noon and into VK3 and 5 during late afternoon.
233 30th - K6HGR/KH6 and W7INX reported F$_2$ from Hawaii to Wash. and Ore. 1150-1243 PST. W4IKK noted auroral buzz on WWI 2020-2055 EST. VK4ZBI heard VK3ZBP at 1315 EAST.

Notes

Beacon station W5FHS, Shreveport, La., left the air on December 24th after 29 months of continuous operation. Ed Nuttall and several other employees of the United Gas Corp. began keying their 100-watt transmitter on 50.55 Mc. in August, 1957. By September they had qualifie for and received special FCC permission to operate 24 hours a day. Between then and IGY's end, W5FHS was a marker for sporadic E openings to the southeastern U. S. Early in 1959 their groun plane antenna was replaced with a long yagi aimed at Buenos Aires, Argentina. This reliable signal helped show up what few TE openings did reach the United States and proved that many mor didn't. Sincere thanks to everyone connected with W5FHS.

Last month's comment on "exospheric" TE prompted ZE2JV and ZC4WR to plan angle of arrival tests with dipoles 1/4 and 3/4 wavelength above ground. We'll be passing along their results and any others received. Meanwhile, VK6BE sends word that his contacts with JA seem to be low angle. His high and in the clear location helps a great deal, as does the use of larger beams.

Here's more on that arctic E$_s$ mentioned last month. W1FVY thinks it may be a result of reflection from the underside of the auroral zone. He plotted the places into which such ionization could bounce signals, and the result agreed with what was worked last summer at T-3.

Late word from ARRL - ham bands will stay as is in the western hemisphere! No changes as a result of Geneva.

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

Number 13 — ARRL Propagation Research Project * IGC-59 — January, 1960

You all responded wonderfully to our plea for continued reporting. In fact, nobody said r After this vote of confidence and the long and pleasant association we have had with you all, the following announcement makes us very sad. PRP will end officially on April 30, 1960. No more logs will be collected after March. The writer is returning East to become an assistant technical editor of QST. This will be a full-time job, and no one here at Stanford is willing to carry on the project. In a way we are lucky, for much other deserving research was forced to shut down a year ago at the end of IGY. PRP will have doccumented 50-Mc. ionospheric propagation for 39 months including the greatest sunspot maximum in history. We won't have all the answers by the end of April, but the results of your labor and ours are bound to have helped get those answers when they come.

Propagation Summary for December, 1959

There's no doubt about it now. Except for the transequatorial paths, intercontinental F_2 DX is down the drain for another decade. December, 1958, gave us frequent openings to both Eur and Japan. This year the 48.25-Mc. BBC video was heard on one day. Even sporadic E was worse. There were 12 good openings in the U. S. last December, but only three or four hot ones this ti around. Aurora stayed about the same with five openings last year and seven worthy of the name this December.

To get specific, E_s was detected on December 3, 4, 5, 6, 7, 8, 11, 13, 17, 19, 20, 24, 27, 30 and 31, but this sounds better than the truth because only the 4th, 5th and 6th affairs were widespread. On the 5th there was afternoon aurora followed by evening sporadic E. Southeaster stations reported flutter on some E_s contacts. The 6th gave us some unexpected double hop. Ha signals traveled by aurora on December 2, 5, 12, 13, 14, 23 and 27, and WWI revealed some buzz to one or more astute listeners on the 3rd, 4th, 7th and 8th. The BBC came in on the 6th, and OA3AAE was picked up on the 14th and 15th.

The only logs we have from southern South America are those of CX1AQ and CX9AJ. All their work was done in the evening and fits into neat categories, so we'll report it here. TE was spotted on December 1, 6, 7, 8, 9, 10, 13, 14 and 18. Amateur activity to the north must have been way down, for these entries mentioned only TV channel 2 in Caracas, a 49.5-Mc. TV link in Mexico and one or two unidentified hams in KP4. Medium-range signals from OA3AAE came in on December 6, 7, 12 and 26. Short range got through to PY1 on December 1, 6, 7, 9 and 20. TV channel 4 in Belo Horizonte was heard on the 6th and 7th, and western Argentina on the 26th.

It seemed unusual to see more entries from VK than JA on Australian logs. Their summer E_s came in full blast and will be covered in the calendar. There wasn't much evening TE to Japan, but afternoon F_2 from JA came in with a regularity that surprised several observers. Most unusual were the several openings from JA to southern VK. To summarize: VK2ABR worked JA's th afternoons of the 20th and 31st. VK3AHL and his cohorts did the same on December 6, 14, 15, 20 24, 29 and 31. VK4NG and VK4ZBI had their afternoons on December 1, 7, 20, 25, 28, 29, 30 and 31. VK6BE notes late morning or early afternoon F_2 on December 6, 12, 20, 21, 25 and 26. VK9X heard JA's twice -- on the evening of the 4th from the NW sounding like E_s, and on the 6th by F

Trans-African TE was definitely down. ZC4WR picked up 50-Mc. signals from ZE2JV on Decemb 8, 10, 12, 13, 16, 17 and 23. The same path was open every evening on 28 Mc., however.

Now to the calendar.

226 1st - Just what's in the summary above.

221 2nd - VE2AOM heard weak auroral signals 2033-2041 EST.

205 3rd - 1650 CST, W4IKK heard aurora on WWI. 1720-2212 EST brought pretty fair E_s to the eastern United States. VE1 worked W8; W1, 2 and 3 worked W4, 8, 9 and 0; W4 also worked Miss and W8 worked Tex.

204 4th - More and better E_s starting off with VE1EF to Ohio, Ind. and Mich. 1320-1351 EST. This began again at 1655, but this time the opening spread over the eastern U. S. and didn't st till 2300. W1 and 2 reported W4, 5, 8, 9 and 0. W3 worked VE1 and Maine plus W4, 8 and 0. VE3AGU heard W4s. W4FNR heard 20 states in W2, 3, 4, 5, 8, 9 and 0. CO2ZX heard W2, 3, 4, 5, 9 and 0. W9 also worked Tex. In the middle of this, W4IKK heard WWI buzzing around 2130 CST. To the west, K7ICW heard E_s to central Tex. at 1900 PST.

207 5th - W9MFH/YIL spotted the first aurora on WWI at 1030 EST. From 1255 till 1700 W1, 2, 3 8 and Va. and VE1 and 3 worked each other. W9 worked only east as far as W8, and W0IBL, Mo., heard aurora on the Collins signal from Cedar Rapids. The last twitter on WWI was at 1910 says W9MFH/YIL. Then came sporadic E for W1, 2, 3, 4, 8, 9 and 0 and VE3 and CO. The latest contac (0030 next morning) and the most interesting ones were made in the Southeast. 1954-2155, W4FNR listed many areas worked but said that Tenn. and N. C. sounded like "heavy aurora with sporadic 1954-2150 CST, W4IKK logged Fla. amateurs and a Cuban BC station, and both had heavy TE-type flutter much of the time.

205 6th - W2IDZ and W5LFM reported the 48.25-Mc. BBC video at 1040-1203 EST and 1020 CST. The latter may have been F_2 plus E_s, because there was plenty of E skip going on from 0900 till noon EST. The usual W1-W4 path wasn't working, but both of these areas were working everything up and down the Central states. CO2ZX got through to Miss., Ark. and Mo. W0CNM, Col., worked Tex., Okla., La. and Calif. This set things up for double hop and sure enough, W4FNR, W4FWH an W4RMU all worked W6s, while W6OKR and K7ICW got through to Fla. A little later, W7ZOW/ZPS, Wasl logged Southern Calif. 0915-0935 EST that morning, OA4C had worked and heard four KP4s. 2007-2122 EST, HC1FS worked XE1P, XE1DDD and XE1GE. From 1000 to 2130 EAST, VK4 had almost continuo E_s to VK2, 3, 5 and 7. VK2-VK3 was another path open.

144 7th - Early riser W4IKK noted aurora on WWI 0615-1647 CST. Around 0800 PST W6BJI worked T and N. M., and K7ICW reached Okla. W4RMU reported E_s to W2 at 1500 EST. 1000-1034 EAST, VK4Z was working VK3s.

17[illegible] 8th - More WWI buzz 0615-0700 CST, says W4IKK. A little more E_s, too, for about 0800 CST W9ALU heard Ala., Miss. and Fla., and W0IBL heard Ohio.

178 9th - 1220-1325 EAST brought VK4 to VK5 and 5 E_s.

177 10th - See the summary.

174 11th - W4RMU heard K4QHN, Sarasota, working W2s about 2000 EST.

172 12th - W1SUZ heard aurora 2010-2150 EST. VK4ZBI worked VK3 and 7 1200-1230 EAST.

165 13th - W4FWH heard W1 and 8 0700-0900 EST. At 0800 PST W6OKR heard VE7AIZ. W6BJI logged Tex., Okla. and Kans. 0925-1015 PST. From 1725 to 1830, W1HDQ, W1SUZ and VE2AOM reported a no eastern aurora. About 2200 EST, CO2ZX heard W8GHX, and W9MFH/YIL heard E_s from Fla. and a few aurora signals. VK2ABR worked VK4 1000-1027 EAST. 2100-2215, VK4 was open to VK3 and 7.

168 14th - W4RMU heard OA3AAE 0930-1010 EST. W1SUZ spied aurora 2300-2335 EST. VK4 worked VK 1320-1345 and 1750-1805 EAST.

174 15th - W4RMU heard OA3AAE again 0834-0900 EST. Between 1000 and 1330 EAST, VK4NG logged V and 5 while VK2ABR worked VK4 and 6. 1730-1940, VK4 was open to VK3, 6 and VK9XK. 2200-0150, VK3AHL worked VK5 and 6.

167 16th - W4IKK heard Tex. signals coming in very fluttery from the west at 0700 CST. VK4s contacted VK2, 3 and 5 0942-1322 EAST. Later at 2000, they were working VK2, 3 and 7.

170 17th - Between 2155 and 2355 EST, W1SUZ heard N. C., W4FWH worked Mass. and heard VE2, and W4IKK spotted E_s to Mass. and R. I. VK4ZBI logged VK7s at 1200 and 2015 EAST.

17[illegible] 18th - 1255-1400 EAST, VK4s worked into VK2, 3 and 5. VK6BE logged VK2 and 5 1231-1310 WA VK2-VK3 was open around 1700 EAST, and VK4 had another affair to VK2, 3 and 7 1800-2000.

183 19th - W4RMU and W4FWH heard Texans on E_s at 2018 and 2135-2200 EST, respectively. W9ALU worked Pheonix, Ariz., at 2015 CST. VK4NG and VK9XK got together 0700-0800 EAST. VK4 worked ZL1 and VK2 around noon. VK9XK had more contacts with VK4 1500-1600.

181 20th - Good sporadic E from noon till mid evening, but this time it was mostly west of the Mississippi. W5KWP, N. M., and W0CNM, Col., appeared to have the best spots and worked into all of W5 and 0. W4IKK was the farthest east observer to report, and he logged Okla., N. M. a Ariz. W6BJI and K7ICW worked many of the Central states. VK4 had all-day E_s from 0823 till 2 EAST. VK9XK came in first, followed by VK2, 3 and 5, and then VK9XK again to close the band.

188 21st - See the summary.

174 22nd - Ditto.

169 23rd - A little more aurora. VE2AOM heard Mass., N. Y. and VE3 1830-1944 EST. 2210-2314, W1SUZ picked up W1, 2 and 3. VK4ZBI reported VK5 1325-1407 and VK9XK 1715-1730 EAST.

166 24th - Midmorning brought such E_s paths as Calif. to Tex., Iowa to N. C., and Mo. to W1 an W0EDM heard W. Va. and N. C. 2005-2031 CST, and W1CLH and W1SUZ heard W5 and 0 2240-2320 EST. VK4NG worked VK3s 1940-2007 EAST.

— 25th - 0840-1110 EAST, VK4s had good sporadic E to VK2, 3, 5 and 7.

164 26th - VK4NG worked VK3 0806-1054 EAST, and found a long opening to VK9XK 1550-2100.

170 27th - W1SUZ heard W4s on E_s around 2200 EST. 0040-0058 next morning, VE2AOM was hearing W1GKE on aurora. VK4NG worked VK3 0830-0854 EAST. Between 1025 and 1455, VK4s got through to VK9 and ZL1. VK2ABR also worked ZL1 and 2 1100-1132.

175 28th - Most all morning VK4s worked VK3 and 5 while VK2 was open to VK3, 5 and 7 plus ZL1. 1830-2000 EAST, VK4 and VK9 opened to VK2, 3 and 5 as well as each other.

174 29th - More all-day sporadic E for the lucky VK's. From 0716 till 2110 EAST, VK4 worked VK2, 3, 5, 7 and 9. VK9 contacted VK2, 3, 4, 5 and 7. VK6 was open to VK3 and 5 in the eveni After 2110, there was another hour of VK3-VK6.

162 30th - There were Col. to Tex. and Nev. to Mo. openings 1850-1920 MST. VK4 worked VK3 and 5 in the morning and VK9 about 1730 EAST. VK2ABR logged ZL at 0850.

170 31st - 1000-1200 EST, K2RRG worked Ill., Kans., Mo. and Ark.; and W9ALU worked W1, 2 and 3 VK2ABR started off with VK4 at 0840 EAST. Then came VK3, 4 and 5 1045-1302. From 1515 till 2 VK2, 3, 4, 5 and 6 were all involved, and VK9XK worked VK5BC.

Notes

ZE2JV finds that the day by day behavior of TE was very similar for November and December, 1957, 1958 and 1959. The same thing goes for the MUF to the U. S. A. This is lower this year, however, and the once regular Sacramento paging service is heard only sporadically.....ZS1LA notes that his TV TE path from Worcester, South Africa, to Caen, France, is the longest consis one on our books (6000 miles). Fred hears Caen often, but he has never heard ZC4WR. The magne equator bisects the Caen path quite exactly and probably helps out.....HC1FS was too polite to anything about it on his December log, but we still don't know why we called him and HC1JW "Columbians" last issue. As everybody knows but us, HC is Ecuador and HK is Colombia.....The columns often run pictures of twisted antennas "after the wind died down," so we think it only fair to sympathize in print with observer W2ZKE. A sudden cellar flood put much of Bill's gea out of the running recently. How many others like the writer can remember stripping their rac from the bottom up as the water rose?

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

Number 14 ARRL Propagation Research Project * IGC-59 February, 1960

March, 1960, the final month of PRP reporting, will be under way by the time you read this There will be an April Newsletter to summarize your March logs if we can receive them all in ti To help, please send your March reports directly to the writer in care of the Radio Propagation Laboratory, Stanford University, Stanford, California. Many thanks.

Propagation Summary for January, 1960

January brought a little more F_2 propagation than some of us had expected. Trans-U.S.A. D came on the 1st, 3rd, 4th, 5th and 7th; and KH6s were worked by West Coasters on January 9, 10, 13, 14, 15 and 18. Transatlantic 50-Mc. reception and possible crossband 28/50 contacts took place on the 27th, 30th and 31st. Interesting, isn't it, how these paths opened up during separate, non-overlapping parts of the month?

Sporadic E was so good that, for the first time in several months, not one W or K PRPer complained about conditions. There were 12 days in all of E_s, including plenty of it for both days of the VHF Sweepstakes. Aurora was only present on three occasions, and there were nine whole days when no 50-Mc. DX was logged in North America.

Around the world, Australians were having excellent summer sporadic E. Their transequatorial record wasn't so good (as is usual for this time of year), but a few contacts with Japan were managed. VK2ABR and VK3ZBP/2 reported F_2-type openings to JA-land on the 4th, 16th and 30t VK3AHL found similar F_2 on January 1, 4, 14, 16 and 22. From JA8BU, VK4NG and VK4ZBI we hear that VK4-JA was open for F_2 on the 6th, 16th, 21st, 22nd and 23rd and for TE on the 27th and 29t VK9XK was away on furlough most of the month (as he will be in February and March) so not many contacts were made with VK9. Another intercontinental note from the Far East: ZL1DE reports hearing South American commercials just below 50 Mc. many times from January 1 through 7.

ZE2JV tested every day in January and was able to get 50-Mc. signals through to ZC4WR on the 7th, 27th, 28th, 29th, 30th and 31st. Down on 28.260 Mc., however, circuit reliability was 93 per cent at both 1630 and 1830 GMT. This path was checked at 1630 on 350 evenings from January, 1959, through January, 1960, and the lower frequency worked more than 99 per cent of the time. Considering that ZC4WR was running just 15 watts, this is quite amazing. Further south, ZS1LA is hearing 41-42-Mc. signals from Eastern Europe rather more often than this time last yea

PZ1AE came through with a husky eight-page log listing TE from Uruguay and Argentina on the evenings of January 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 15, 17, 18, 19, 22, 24, 25, 26, 27, 28, 29, 30 and 31. Rene picked up OA3AAE on January 2, 6, 7, 8, 9, 11, 13, 15, 17, 18, 22, 24, 26, 28 and 30. Other medium-range signals: HC1FS was worked on the 24th, 28th and 30th; contact was made with PY7AEP in the 25th, 26th, 29th and 30th. PZ1AE missed monitoring only the 1st, leaving the 10th, 16th, 20th, 21st and 23rd as definitely dead evenings in Surinam.

We'll lump together the results of CX1AQ, CX9AJ, LU3EX and LU2FAO to tell the story for the Montevideo/Buenos Aires/Rosario area. TE signals from KP4 came in January 2, 4, 6, 7, 8, 9, 12, 15, 24, 26, 27, 28 and 30. YV-land was heard on the 8th. Medium-range signals from OA3AAE were heard January 6, 7, 8, 10, 22, 24, 26, 28 and 30; from PY7 on January 16, 18, 19, 26 and 31. PY1, 2 or 3 were worked January 6, 7, 22, 24, 25 and 26.

LU9MA's most often heard signal was TV channel 2 in Caracas, Venezuela. This was heard the evenings of January 7, 8, 9, 11, 13, 15, 17, 18, 19, 28 and 30. Channels 3 and 4, Sao Paulo and Bell Horizonte, Brazil, were heard on the 7th; Puerto Rico on the 8th; and PY1-land on the 26th, 27th and 30th. PY5GK was active on January 11-13 and 24-31. He heard OA3AAE on the 11th, 27th, 28th and 30th; PY7 on the 11th, 27th and 29th; KP4 on the 29th. HC1FS reported openings to Argentina on the 8th (Fred's first opening since December 3rd) and 13th. XE1GE was away through the 19th but heard OA3AAE on the evening of the 31st. That's the South American story; now let's look at the things less easy to classify.

1st - CO2ZX heard Tex. E_s 1943-2200 EST plus W6KD via double hop at 2025. More paths criss crossed the Western states between Calif., Col., Nev., Ariz., N.M., Tex. and La. Australian E_s began with VK3 to VK4 at 0830 EAST. 1050-2305, there was a continuous opening which connected all combinations of VK2, 3, 4, 5 and 6, plus VK3 and 9.

178 2nd - CO2ZX to Tex. once again, 2018-2228 EST. VK4s were logged by VK3AHL at 1000 EAST and by VK2ABR at 1800 and 1915.

195 3rd - Between 1345 and 1400 EST, W1HDQ and VE3AGU logged Northern Calif. W6s and BS from th Midwest. W6OKR was working K2CBA and K2JLR, and W9YIL/MFH heard VE1 and 2 and K2JLR coming in from the NE sounding like BS. VK4 worked into VK2, 3 and 5 during the morning, while VK4ZBE picked up 9M2DQ at 1130 EAST. 1825-1915, it was VK4 to VK3 and 7 and VK3 to VK2.

196 4th - A little after 1300 EST, W4FNR worked VE7AIZ, and W6OKR worked N.Y. and N.J. VK4NG logged VK2, 3 and 5 between 0930 and 1407 EAST. He heard VK3 and 5 again 1943-2040.

217 5th - W4FNR worked K6GOX at 1230 EST. From then till 1430, he and CO2ZX had E_s to Tex. W6BJI logged Fla. F_2 0925-0947 PST, and W7INX heard weak Cuban signals at about the same time. W0CNM heard Tex. on E_s 1745-1830 MST.

217 6th - 0800-0845 EST, OA4C was hearing KP4s. Both W4FNR and CO2ZX picked up more Tex. stations 1200-1345. 1030-1400 EAST brought VK4 to VK2, 3 and 5; 1930-2222, it was VK3 to VK2, 4, 5 and 7.

228 7th - W4FNR heard W6OKR and W7?? at 1310 EST. W6OKR heard W1LUN at 0955 PST, W4LIP at 1012, and both at 1030. Between 1000 and 1420 EAST, VK4 worked VK2, 3 and 7; VK2 worked VK3, 5 and 7; VK3AZY worked ZL1, 2 and 3. 1653-2030 brought VK4 signals to VK2, 3 and 5.

223 8th - VK2ABR logged VK4s 1727-1745 EAST. VK4NG worked VK2, 3 and 4 1943-2140, and the VK3-VK4 contacts went on till 0125.

AN

14 9th - W6OKR was hearing KH6s at 1145 PST. About 1730 EST, W1, 2 and 3 started working W4s and 5s on E_s -- a very nice situation for the first evening of the Sweepstakes! This kept up till 2015. At 1930, the W4s found the opening swinging toward W8, 9 and 0, followed by W5. Ou latest entry is for 2321. VKs had off-and-on sporadic E from 0820 till 2250 EAST. Perhaps the high spot was VK3AHL's working ZL2DS on s.s.b., the first ZL/VK 50-Mc. s.s.b. two-way.

197 10th - So much went on the second day of the Sweepstakes it's hard to keep things in order. At 0700 EST, PZ1AE heard European TV up to 53.25 Mc. LU9MA heard the BBC video at 51.75 Mc. at 0940 LU time. 1220-1355 EST, W4FNR, W4RMU and K7ICW all heard KP4s. K7ICW kept on hearing the till 1200 his time and was joined by W0CNM. 1110-1308 PST, W6BJI heard KH6s as did W7ZOW/ZPS a few minutes later. 1335-1410 PST brought Calif. to N.M. and Tex. E_s. The big affair was a mos Eastern states sporadic E session which lasted from 1730 to 2325 EST. W1HDQ rated it the most widespread winter E_s opening he'd ever experienced. W1, 2, 3, 4 and 5 and VE2 and 3 had most c the fun, but W0EDM was working Nev., Ariz. and Tex. as late as 0014 CST. K7ICW was the westest station to log in; he worked W5 and 0. Oh yes, W1CLH says W1, 2 and 3 were coming in on auror 1600-1700 EST, too. And let's not forget, 1130-1250 EAST, VK4 worked VK3 and 5.

233 11th - W4CSN worked Tex. about 0700 CST. 1700-2345 PST brought widespread E_s to W5, 6, 7 a 0. W6BJI logged most of the Western states and added Miss., Ala., Fla. and Tenn. for good meas VK2ABR worked VK4 at 1015 EAST. VK4NG listed VK3 and 7 1245-1315 and VK3 and 5 1700-1840.

[illegible] 12th - Early morning E_s hooked W6s up with Mont. and Wash. 1710-1920 PST, K7ICW worked Tex Also during early evening, W1, 2, 3 and 8 worked W4 and 5; W0CNM and W0EDM worked Tex.; W7ZOW/ZPS picked up more W6s. 1555-1745 EAST it was VK3 and 4 getting together; 1805-2045, VK3 work VK2, and VK4NG logged VK3 and 7.

181 13th - Wash. to Calif. E_s came around 0930 PST. Between 1152 and 1240, W6BJI, W6OKR and W7ZOW/ZPS all received KH6s. VK4NG worked VK2 and 3 1725-2035 EAST.

177 14th - The same three Western stations heard KH6s 1130-1330 PST. W7ZOW/ZPS also mentioned BS from Calif. and Ariz. Aurora came to W1, 2, 3, 4 (Va.), 8 and 9 and VE2 between 1705 and 21 EST. Last reports of the evening were from W9YIL/MFH working Ohio and other W9s. Noon, midaft noon and evening E_s in Australia -- mostly VK4 to VK2 and 3.

[illegible] 15th - W6s and 7s had more KH6 contacts from 1115 till 1320 PST. CO2ZX logged K4PCN, Va., 2050 EST. E_s in Australia was VK3 to VK4 and 6 in the morning; VK4 to VK3, 5 and 7 at noon; VK4 to VK2, 3, 5 and 7 in the evening.

186 16th - W4RMU heard OA3AAE coming in 2135-2240 EST with no flutter. 1645-2330 EAST, VK2 and VK4 worked each other plus VK3, 5 and 7.

182 17th - Between 0900 and 1015 EST, W4FWH and W4RMU heard HC1FS, and the latter also picked u OA3AAE. HC1FS, himself, reports working Fla., Ala., Miss., La., Tex. and Tenn. VK4NG worked VK5 at 1930 EAST; VK3 and 4 got together around 2310.

171 18th - W6OKR heard Hawaii at 1130 PST. Thass all.

16 19th - VK2 to VK4 1807-1843 EAST, and VK4 to VK7 1842-2015.

[illegible] 20th - VE2AOM detected aurora at 2300 EST. VK3 worked ZL 1720-1750 EAST. VK4NG reports VK 3 and 7 from 1830 till 1927.

[illegible] 21st - XE1GE heard OA3AAE 1000-1015 CST.

174 22nd - Same only 0800-0845 CST. 1000-1400 EAST featured VK3 to VK2, 4 and 5.

[illegible] 23rd - W5KWP heard E_s from San Diego W6s 1907-2120 MST. At the same time, Northern and Southern Calif. were getting together on short (350 mile) short skip.

213 24th - VK4NG got through to VK3 and 5 0850-1107 EAST.

233 25th - Just what's in the summary.

245 26th - VK4NG logged VK3 0945-1055 EAST and VK2, 3 and 5 from 1720 till 2300.

251 27th - W4FNR worked E_s to Tenn. and Ky. 1100-1110 EST. G3EHY heard W1LGE weakly around 150 GMT. This was the first time G3EHY had seen signs of an opening since last October. 1900-2215 EST brought fair E_s; W4 worked W5 and 0, and W3 and 9 worked W5. 0940-1150 EAST, VK4 worked VK2 and 3. In the evening, VK4 worked VK5, and VK3 and 5 worked VK6WG.

255 28th - VK3 and 4 had sporadic E from 2010 to 2230 EAST.

340 29th - VK3AHL heard VK4ZAX with TE-type flutter 0015-0033 EAST.

223 30th - W1DEI, W1GKE and W1LGE all QSOed G3EHY crossband 0908-1017 EST. They said it couldn be done!

227 31st - G3EHY was working more crossband, says W1CLH, but only as far south as Mass. and nor to VE1. VK2ABR logged VK4ZBE at 1210 EAST.

Head South for Better TE

The first comparisons between South American ham results and 50-Mc. backscatter from Puerto Rico have us wishing we could head for the southern tip of Argentina. Considerably less sensitive than amateur gear, the sounder never sees any echoes from the Montevideo/Buenos Aires "TE Belt," even when CX's and LU's are working KP4s. It does see lots of strong returns from 7000 to 10,000 km. south, so think what hams could do from down there! Another interesting point -- the backscatter echoes tend to drop out around 2000-2100 and then come in again, and it's durin this drop-out that most of the amateur TE to Puerto Rico is reported.

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
ARRL-IGC Project Director

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THE PRP'59 NEWSLETTER

Number 15 ARRL Propagation Research Project * IGC-59 March, 1960

The last month of PRP reporting will probably be over by the time you read this. We hope your final log was sent directly to Stanford as suggested last month. All the material reachi us by April 15th will be summarized in the concluding newsletter.

Propagation Summary for February, 1960

W and K logs were pretty drab this month with long pages of negative entries. "Worst mon since the start of IGY" was a not uncommon complaint. F_2 yielded only one opening to the east, one to the west and one south. There were weak efforts at aurora on the 5th, 13th, 14th, 16th and 17th; and pitiful patches of sporadic E on the 7th and 28th. On January 2, 3, 4, 6, 8, 9, 10, 11, 12, 15, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27 and 29, there was nothing but nothing.

By contrast, conditions were wonderful in South America where everything came during the evening as usual this time of year. PZ1AE sent in a huge log full of his observations on ever night but the 8th through 11th. He heard TE to the Buenos Aires/Montevideo area every other evening but the 2nd, 13th, 14th and 29th. His "pipeline" to HC1FS was still functioning, and these two exchanged signals on Feb. 1, 4, 5, 7, 12, 21, 25, 26 and 28. On the 5th they stayed in contact for over an hour, and PZ1AE's S-meter never budged from the pin. HC1FS usually come in sounding like a combination of TE and E_s. PZ1AE also heard medium-range signals from PY6 a 7 on the 5th, 12th, 15th and 24th; and from OA3AAE on the 6th and 12th. TE from western Argent and Chile came in on Feb. 4, 7, 21, 22, 24 and 28. Rene reports that at the beginning of most TE openings carriers may be up to S8 in strength, but all signals will sound only 50% or less modulated. He also notes frequent fluctuations in conditions and fading rates between 2000 an 2100 EST. This may tie in with the changes seen on the Puerto Rico sounder about this time.

XE1GE found TE to Buenos Aires/Montevideo on the nights of Feb. 6, 7, 11, 19, 20, 21, 22, 26 and 28. He heard HC1FS on the 20th and 22nd.

We've lumped reports from CX1AQ, CX9AJ, LU2FAO/5FCE and LU3EX together for a complete picture of what was worked from around Montevideo, Buenos Aires and Rosario. The most regular TE (aside from PZ1AE's work already reported) came from Puerto Rico. KP4s were worked on Feb. 1, 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27 and 28. HC1FS was picked up on Feb. 7, 12, 19, 21, 22, 24, 25, 27 and 28. Medium-range signals from PY6 and 7 came in on Feb. 3, 6, 9, 13, 15, 16, 17, 18, 19, 21, 22, 23 and 26. OA3AAE was heard only on Feb. 6, 7, 9, 10, 11, 12 and 15. Short-range contacts with nearby PY1, 3, 4 and 5 were had on Feb. 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28 and 29. Stations from Chile and western Argentina were received on the 8th, 18th, 22nd, 26th and 28th. LU3EX also made his first contacts with FM7WU and FY7YC/FM7, and worked into Fort-de-France, Martinique, on Feb. 10, 11, 19, 20, 21, 22, 23, 24 and 27.

PY5GK in Curitiba had a lot to report, too. He worked TE on the evenings of Feb. 4, 7, 9, 10, 11, 12, 15, 17, 18, 20, 21, 22, 25, 27 and 28. Just over the equator HC1FS came in on Feb. 7, 12, 22, 24, 25, 27 and 28. OA3AAE was heard on Feb. 4, 6, 7, 9, 11, 12 and 16. PY6 and 7 were reported on Feb. 4, 8, 9, 15, 16, 18, 21, 23 and 24. Nearer PY1 was reached on Feb. 5, 6, 7, 10, 15, 16, 17, 20, 22, 23, 25 and 26. Montevideo and Buenos Aires stations were worked on Feb. 6, 7, 9, 18, 20, 21, 22, 23, 24, 25 and 28. Chile and western Argentina came in Feb. 6, 7 9, 10, 12, 18, 20, 22, 23, 24, 25, 26, 27 and 28.

Out in the Far East, VK4NG spotted evening TE signals from Japan on Feb. 1, 9, 10, 11, 12, and 28. Afternoon F_2 from Japan came in on Feb. 7, 13, 14, 20, 21 and 28. The evenings of the 7th, 8th, 20th and 22nd produced strong, steady JA signals between very limited areas. The usual TE openings give several JA call areas simultaneous contact with most or all of VK4 and sometimes part of VK2. On these evenings, only a few stations near each other would come in at once.

VK6BE noted only afternoon F_2 openings. Japanese signals came in on the 20th and 21st; HLKA in Korea was heard on the 1st, 21st, 22nd and 28th. On the 21st, Bob and three friends hooked a new TV receiver up to his beam for a look at some video on 49.75 Mc. They got quite good pictures, and the station proved to be Russian. The signal had been heard many times during the past two years but never identified. Further reception came on the 22nd, 27th and 2

ZE2JV and ZC4WR checked the Southern Rhodesia to Cyprus path every evening but the 6th, 17 and 19th on 28 and 50 Mc. They were successful every evening both stations were on hand. ZC4WR also heard ZS3G on the 25th.

ZS1LA, Worcester, South Africa, had fluttery, early afternoon reception from the TV statio at Caen, France, on the 7th, 8th, 11th, 26th and 27th. Caen came in in the evening with no flutter on Feb. 11, 13, 14, 15, 25 and 29.

This run-through of the more or less consistent paths hasn't left much for our calendar, but here's what else happened:

228 1st - The day of the month for transatlantic F_2. At 0917 EST, G3EHY was in QSO with W1UAR W1LGE worked G3EHY at 1025 and heard European TV as high as 50.6 Mc. till 1145. 1050-1125, W4R heard video near 50 Mc. from the northeast. Between 1100 and 1108 EST, G4LX picked up K1DIT, W1LGE and K2MUB.

215 4th - G4LX heard ZE2JV at 1800 GMT.

217 5th - W1CIH heard W1, 2, 3, 4 (Va.) and 8 from 2135 till 2228 via a rather poor aurora.

211 7th - K3EZK logged VE1BB on sporadic E at 1150 EST.

169 13th - Surprise! W6BJI worked JA1BWD, JA1CDE and JA2AMM between 1655 and 1720 PST. Around 1715 W6OKR heard JA1BIR and an unidentified JA. This seems to have been the first spring JA-W 50-Mc. opening on record. VE3AGU heard W2s on aurora 1735-1835 EST. K2RRG gave his aurora tim as 1800-1930 and mentioned working W8GNL.

169 14th - 0930-0955 EST, PZ1AE worked W4AYV, W4BCB, K4EBO and W4PNS. W4RMU heard what was probably OA3AAE around 0945. G4LX heard ZE2JV at 1645 GMT. VE2AOM listened to W1, 2, 3 and 8 on aurora 1952-2034 EST.

151 16th - 2108-2120 EST, W1CLH noted a "light trace" of aurora bringing in W1, 2 and 3.

17th - K2RRG found more aurora between 1910 and 2040 EST and worked VE3BPR.

19th - LU3EX and LU2FAO/5FCE both contacted K7ALE, Tucson, Ariz., between 2315 and 2330 LU time. VK4NG reports E_s to VK7 2015-2130 EAST.

143 20th - This time it was VK4-VK3 sporadic E around 1315 EAST. From 1650 till 1710, VK4NG heard K6HGP/KH6 and KH6UK with F_2-type signals.

150 22nd - LU3EX and LU2FAO/5FCE got through to Hawaii between 2150 and 2317 LU time.

145 26th - OA4C heard and worked KP4AAN and KP4AHX 2210-2300 EST.

28th - W6OKR heard W7QDJ on sporadic E 0747-0806 PST. PZ1AE heard LU9MA calling K5DCQ at 2020 EST. ZE2JV logged this sequence of events: At 1743 GMT, the observed MUF from Salisbury, Southern Rhodesia to Italy was 67 Mc. From 1835 to 1845, ZC4WR, Cyprus, was worked on TE. He faded out, and in came signals to above 50 Mc. from the U. S. A. (no hams, unfortunately). At 1907, the U. S. A. MUF dropped rapidly to 37 Mc., and by 1910 ZC4WR was back in on TE. This TE fade out seems to be standard practice during any openings to the States.

Radar Echoes from the Sun

You've probably read something about the Stanford Radioscience Lab's latest achievement -- reception of radar echoes from the sun -- in your newspaper. We thought you might like a few details not likely to have appeared in the popular press. The frequency used had to be low enc to avoid extensive absorbtion in the solar corona above the actual reflecting surface. It alsc had to be high enough to pass through our own ionosphere and to allow the use of an antenna wit reasonable gain. The choice for the experiment was 25.6 Mc. This in turn made low-noise recei ing devices unimportant, because cosmic and solar noise limited the detectability of weak signa

Most of the equipment had been collected at Stanford in connection with other experiments. The transmitter was a Collins FRT-22 with 40 Kw. average output power. The antenna consisted c four rhombics in a broadside array covering a rectangular area of 800 by 725 feet. Its gain at 25.6 Mc. was estimated at 25 db. Actually, four more rhombics were available, but the resultin pattern would have been too sharp considering the long time delay of the returns and the consta ly changing position of the earth. With just four arrays, the sun is in the beam for only abou 30 minutes soon after sunrise on a few days near each equinoctial period.

The travel time to reach the sun (93 million miles away) and back to earth is about 1000 seconds. The transmitter was pulsed on and off alternately throughout a time interval of 15 mi utes, each on and each off period lasting 30 seconds. After each 15 minute (900 second) period the antenna was connected to a 2000-cycle bandwidth receiver and the output recorded for later detection and analysis.

The echoes were expected to be some 44 db under the noise after detection. Clearly, speci methods were required to find them. The recordings were sampled 4000 times each second with an IBM 797 computer. Absolute values of the samples were then summed for periods of one second. Then a square wave of one minute period representing the transmitted signal was cross-correlate with the one-second sums for each day. The shape of the cross-correlation curves matched close what was expected from a target the sun's distance away, so the experiment was a success. All that was proved is that the sun is there and that we can get echoes from it. Now, however, it is possible to plan with confidence new procedures for more meaningful studies in radar astrono

Notes

Several of you have asked about pulse and teletype signals between 49 and 50 Mc. coming from the west Pacific. Two good v.h.f. hams and true, W4AO and W4LTU, engineer for a company which has quite a bit to do with scatter communications in that area. Walt tells us that information on frequencies and sites has been declassified, and he is trying to make it availab Meanwhile, we have learned that the NBS stations at Poro Point, Philippine Islands (49.84 Mc.). and Okuma, Okinawa (49.68 Mc.), shut down as of November 1st. If you heard signals on these frequencies after that, it wasn't them!

Bob, K6RNQ, was married on February 13th, and Mr. and Mrs. Grimm now reside at 2800 Monticello Street, Oakland. We don't usually print social notes, but we wonder if this one had anything to do with Bob's checking with Internal Revenue people to see if ham gear used for the IGY and IGC is tax deductible. Turned out he could deduct it under contributions! Better chec locally, though, before taking such a step yourself.

W4FNR sent in his February log from Rio de Janeiro. Ab was down there in connection with communications for President Eisenhower's trip. He "had high hopes of 50-Mc. observing but ala I only had an SP600 located in the transmitting station where 38 10 kw. transmitters on DSB, SSI A1 and F9 completely clobbered the spectrum."

Very 73,
Mason, W1VLH
Mason P. Southworth, W1VLH
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